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112. Earthquakes in California in 1892, by Charles D. Perrine. 1893. 8°. 57 pp. Price 10 cents.

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125. The Constitution of the Silicates, by Frank Wigglesworth Clarke. 1895. 8°. 109 pp. Price 15 cents.

126. A Mineralogical Lexicon of Franklin, Hampshire, and Hampden counties, Massachusetts, by Benjamin Kendall Emerson. 1895. 8°. 180 pp. 1 pl. Price 15 cents.

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Mineral Resources of the United States. 1888. by David T. Day. 1890. 8°. vii, 652 pp. Price 50 cents.

Mineral Resources of the United States, 1889 and 1890, by David T. Day. 1892. 8°. viii, 671 pp. Price 50 cents.

Mineral Resources of the United States, 1891, by David T. Day. 1893. 8°. vii, 630 pp. Price 50 cents.

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Mineral Resources of the United States, 1893, by David T. Day. 1894. 8°. viii, 810 pp. Price 50 cents.

On March 2, 1895, the following provision was included in an act of Congress:

"*Provided*, That hereafter the report of the mineral resources of the United States shall be issued as a part of the report of the Director of the Geological Survey."

In compliance with this legislation, the report Mineral Resources of the United States for the Calendar Year 1894 forms Parts III and IV of the Sixteenth Annual Report of the Survey.

The money received from the sale of these publications is deposited in the Treasury, and the Secretary of the Treasury declines to receive bank checks, drafts, or postage stamps; all remittances, therefore, must be by POSTAL NOTE or MONEY ORDER, made payable to the Director of the U. S. Geological Survey, or in CURRENCY, for the exact amount. Correspondence relating to the publications of the Survey should be addressed

TO THE DIRECTOR OF THE
UNITED STATES GEOLOGICAL SURVEY,
WASHINGTON, D. C.

WASHINGTON, D. C., *March, 1896.*

DEPARTMENT OF THE INTERIOR

BULLETIN

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CHARLES D. WALCOTT, DIRECTOR

SEP 30 1897

BIBLIOGRAPHY AND INDEX

OF

NORTH AMERICAN GEOLOGY, PALEONTOLOGY, PETROLOGY, AND MINERALOGY

FOR

1892 AND 1893

BY

FRED BOUGHTON WEEKS

WASHINGTON
GOVERNMENT PRINTING OFFICE
1896

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LETTER OF TRANSMITTAL.

DEPARTMENT OF THE INTERIOR,
UNITED STATES GEOLOGICAL SURVEY,
DIVISION OF GEOLOGY,
Washington, D. C., April 30, 1895.

SIR: I have the honor to transmit herewith the manuscript of a Bibliography and Index of North American Geology, Paleontology, Petrology, and Mineralogy for the years 1892 and 1893, by Mr. F. B. Weeks, with the recommendation that it be published by the Survey. I believe that the work has been well done, and that the publication will be a useful one.

Very respectfully,

S. F. EMMONS,
Geologist.

HON. CHARLES D. WALCOTT,
Director United States Geological Survey.

BIBLIOGRAPHY AND INDEX OF NORTH AMERICAN GEOLOGY, PALEONTOLOGY, PETROLOGY, AND MINERALOGY FOR 1892 AND 1893.

By Fred Boughton Weeks.

INTRODUCTION.

This Bibliography and Index is a continuation of the Record of North American Geology by N. H. Darton,[1] though the scope of the work and its arrangement have been materially changed. The last Record, Bulletin No. 99, embraced publications on geology for 1891. The present work covers the years 1892 and 1893 and consists of a record of the papers on North American geology, paleontology, petrology, and mineralogy contained in the List of Publications following.

Bibliography.—The Bibliography consists of full titles of separate papers, classified by authors, an abbreviated reference to the publication in which the paper is printed, and a brief summary of the contents, each paper being numbered for index reference. The extent of papers less than a single page in length is indicated, as ⅓ p., 5 l. (lines).

Index.—The subject headings, their subdivisions and arrangement, are shown in the Classified Key to the Index. They comprise geographic, geologic, mineralogic, paleontologic, and petrologic subdivisions. Under Economic Geology is given a list of useful minerals and ores described in publications examined; under Mineralogy, a list of minerals described in such publications; under Paleontology, a list of genera and species of fossils therein described; and under Petrology, a list of rocks described; reference being made in each case, by author's name and number of article in the Bibliography, to the paper in which the fossil, mineral, or rock is described.

The author is under many obligations to different members of the Survey for suggestions as to the general character and arrangement of the material comprised in this volume.

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[1] Bibliography of North American Geology for 1886, by Nelson H. Darton; Bull. U. S. Geol. Survey No. 44, 35 pp., 8°, 1887. Record of North American Geology for 1887 to 1889, inclusive, by Nelson Horatio Darton; Bull. U. S. Geol. Survey No. 75, 173 pp., 8°, 1891. Record of North American Geology for 1890, by Nelson Horatio Darton; Bull. U. S. Geol. Survey No. 91, 88 pp., 8°, 1891. Record of North American Geology for 1891, by Nelson Horatio Darton; Bull. U. S. Geol. Survey No. 99, 73 pp., 8°, 1892.

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Jour. of Geol., vol. i, pp. 325–340.

Gives the results of a detailed study of the Laurentian rocks of the Grenville district in Quebec, including a description of the fundamental gneiss, the Grenville, Anorthosite, and Hasting series, and the orographic movements to which they have been subjected.

2 —— On a melilite-bearing rock (alnoite) from Ste. Anne de Bellevue, near Montreal, Canada.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 269–279.

Abstract: Am. Nat., vol. xxvi, p. 697.

Describes the formation occurring in the bed of the river and its mineralogic constituents. Differs from original alnoite in containing more olivine. Probably connected with volcanic center of Mount Royal.

3 —— Ueber das Norian oder Ober-Laurentian von Canada.

Neues Jahrbuch für Mineralogie, Geologie, und Palaeontologie, 1892, pp. 419–498.

Abstracts: Am. Nat., vol. xxvii, p. 564; Am. Jour. Sci., 3d ser., vol. xlvi., pp. 153–154 (⅛ p.).

4 —— Notes to accompany a tabulation of the igneous rocks based on the system of Prof. H. Rosenbusch.

Can. Rec. Sci., vol. iv, pp. 463–469.

Abstract: Am. Geol., vol. ix, pp. 268–269.

Noticed in record for 1891.

5 **Agassiz** (Alexander). Calamocrinus diomedæ, a new stalked crinoid, with notes on the apical system and the homologies of echinoderms.

Harv. Mus. Comp. Zool., Memoirs, vol. xvii, No. 2, pp. 5–95, pls. i–xxxii.

Gives an account of the confusion that has arisen in the nomenclature of the primary divisions of echinoderms. Describes the structure of the new crinoid.

6 —— Reports on the dredging operations off the west coast of Central America to the Galapagos, to the west coast of Mexico, and in the Gulf of California, in charge of Alexander Agassiz, carried on by the U. S. Fish Commission steamer *Albatross*, Lieut. Commander Z. L. Tanner, U. S. N., commanding.

Harv. Mus. Comp. Zool., Bull., vol. xxiii, No. 1, pp. 1–89, pls. i–xxii.

Gives a brief account of the expedition, and a description of the character of the deep-sea deposits as shown by dredgings.

7 **American Geologist.** Pleistocene papers at the Rochester meetings.

Am. Geol., vol. x, pp. 217-224.

Abstracts of papers read before the Geological Society of America at its sessions in Rochester, N. Y., Aug. 15-22, 1892.

8 —— Pleistocene papers read at the Ottawa meeting of the Geological Society of America.

Am. Geol., vol. xi, pp. 171-179 and pp. 241-245.

Gives abstracts of papers and discussions concerning glacial deposits and phenomena.

9 —— Pleistocene papers at the Madison meetings.

Am. Geol., vol. xii, pp. 165-181.

Contains abstracts of papers and discussion on Pleistocene geology.

10 —— Reviews of the Ice age at the World's Congress on Geology.

Am. Geol., vol. xii, pp. 223-231.

Gives abstracts of papers on glacial succession.

10*a* **American Journal of Science.** [Papers read at the Madison meeting of the Geological Society of America.]

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 302-306.

Gives a list of papers read and brief abstracts of their contents.

11 **American Journal of Science.** Geological Congress at Chicago.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 306-307.

Gives list of papers presented.

12 **Ami** (Henry M.). Notes and descriptions of some new or hitherto unrecognized species of fossils from the Cambro-Silurian (Ordovician) rocks of the Province of Quebec.

Can. Rec. Sci., vol. v, pp. 96-103.

Describes species of Bryozoa, including Solenopora compacta Billings, var. minuta, n. var., Dicranopora parva n. sp., Prasopora lycoperdon Vanuxem, var. selwyni, n. var., Diplotrypa quebecensis n. sp., and Monotrypa incerta n. sp., and two doubtful species.

13 —— Paleontological notes.

Can. Rec. Sci., vol. v, pp. 104-108.

Gives a list of fossils found in the three Ordovician terranes along L'Assumption River and a list of Ordovician species collected from the Manitou Islands, Lake Nipissing, Ontario. At several points the islands consist of sedimentary strata, while the lake shores are completely made up of Archean rocks.

14 —— The Utica terrane in Canada.

Can. Rec. Sci., vol. v, pp. 166-183 and 234-246.

Describes the stratigraphic and lithologic characters of this formation, and gives lists of fossils, which number about sixty forms, mark a special horizon of the Ordovician, and show an affinity to the fauna of the overlying Hudson River and underlying Trenton.

15 —— Additional notes on the geology and paleontology of Ottawa and its environs.

Ottawa Nat., vol. vi, pp. 73-78.

Includes brief description of Silurian strata and some Pleistocene deposits in this vicinity and names of fossils found in them.

16 **Ami** (Henry M.). Notes on the geology and paleontology of the Rockland quaries and vicinity in the county of Russell, Ontario, Canada.

Ottawa Nat., vol. vii, pp. 138-147.

Describes the geologic features of the region, including a description of the Potsdam, Calciferous and Chazy, and Black River and Trenton series and an account of the megascopic and microscopic characters of the Rockland limestone and a list of fossils collected at the quarries.

17 —— On the sequence of strata forming the Quebec group of Logan and Billings, with remarks.

Abstract: Ottawa Nat., vol. vi, pp. 41-43.

Discusses the relations of the strata composing this group and gives a table showing the formations comprising the Ordovician system.

18 —— Extinct Canadian vertebrates from the Miocene rocks of the Northwest Territories of Canada.

Abstract: Ottawa Nat., vol. v, pp. 74-76.

Describes Menodus angustigenis, Elotherium mortoni Leidy, and Leptomeryx mammifer Cope, and mentions other extinct forms.

19 **Arey** (Albert L.). Preliminary notice of the discovery of strata of the Guelph formation in Rochester, N. Y.

Roch. Acad. Sci., Proc., vol. ii, pp. 104-107.

Describes the outcrop and gives a table comparing its fauna with those of the Guelph formation of Canada, Wisconsin, and other localities.

19*a* **Argall** (Philip). [Gold-bearing quartz.]

Colo. Sci. Soc., Proc., vol. iv, pp. 331-336.

In discussion of paper by T. A. Rickard on certain dissimilar occurrences of gold-bearing quartz.

19*b* —— [Origin of ore deposits.]

Colo. Sci. Soc., Proc., vol. iv, pp. 353-354.

In discussion of paper by P. H. Van Diest on the evidence bearing on the formation of ore deposits by lateral secretion.

19*c* —— Nickel. The occurrence, geological distribution and genesis of its ore deposits.

Colo. Sci. Soc., Proc., vol. iv, pp. 395-421.

Describes the chemical composition and occurrence of nickel in meteorites. Gives the chemical composition of the nickel ores, and discusses the occurrence of the arsenides, sulphides, and silicates of nickel, the genesis of the ore bodies and the distribution of the nickel ores.

20 **Ayres** (Edward F.). Plattnerite, and its occurrence near Mullan, Idaho; by Wm. S. Yeates. With crystallographic notes.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 407-412.

B.

21 **Bäckström** (Helge). Causes of magmatic differentiation.

Jour. of Geol., vol. i, pp. 773-779.

Reviews the literature of the subject and discusses the causes and conditions under which magmatic differentiation takes place.

22 **Bailey** (E. H. S.) and **Case** (E. C.). On the composition of some Kansas building stones.

Kans. Acad. Sci., Trans., vol. xiii, p. 78 (¼ p.).

Brief note giving results of chemical analyses.

23 **Bailey** (L. W.) and **McInnes** (W.). Report on portions of the Province of Quebec and adjoining areas in New Brunswick and Maine.

Canada Geol. Surv. Reports, vol. v, new series, part i, 1890–91, Report M, 27 pp.

Discusses the relations of the Cambrian and overlying Silurian rocks in this region, and states that fossils found in the latter indicate a Lower Helderberg horizon. Describes and illustrates by a colored sketch map the supposed arrangement of the Cambrian strata between Temiscouata Lake and Rivière du Loup.

24 **Bain** (Harry Foster). Distribution and relations of the St. Louis limestone in Mahaska County, Iowa.

Iowa Geol. Surv., vol. i, First Ann. Rept., 1892, pp. 173–179.

The Lower Coal Measures lie unconformably on the St. Louis limestone, the Kaskaskia beds to the south having been deposited in the interval. The Coal Measures filled up the valleys and the present drainage systems are independent of the old land surface.

25 **Bain** (F.). The Permian in Prince Edward Island.

Science, vol. xxi, pp. 132–133.

Describes the occurrence of Permian sandstones and shales and gives an account of their fossil contents.

26 **Baldwin** (S. Prentiss). Recent changes in the Muir glacier.

Am. Geol., vol. xi, pp. 366–375.

Discusses the methods of measuring the ice movement adopted by other observers and points out certain probable errors.

27 —— Muir glacier, Alaska.

Sci. Am., vol. lxvi, pp. 227–228.

Contains a general description of the glacier and an account of explorations in this region.

28 **Barbour** (Irwin H.). Notice of new gigantic fossils.

Science, vol. xix, pp. 99–100.

Describes some new fossils from northwestern Nebraska.

29 —— On a new order of gigantic fossils.

University of Nebraska, University Studies, vol. i, No. 4, July, 1892, p. 23, pl. 5.

Abstract: Jour. of Geol., vol. i, p. 421.

Describes a new order of Miocene fossils from Nebraska and proposes the following classification:

Order.	Family.	Genus.	Species.
....	Daimonelicidæ	Diamonelix	circumaxilis. bispiralis.
	....	....	anaxilis. robusta. carinata.
		....	....
		....	....

30 **Barlow** (Alfred E.). On the nickel and copper deposits of Sudbury, Ontario.

Ottawa Nat., vol. v, pp. 51-71.

Abstract: Can. Rec. Sci., vol. v, pp. 68-69.

Gives an account of the mining operations of the district and a description of the geologic occurrence of the ore and of its mineralogic characters.

31 —— Relations of the Laurentian and Huronian rocks north of Lake Huron.

Geol. Soc. Am., Bull., vol. iv, pp. 313-332.

Abstract: Am. Nat., vol. xxvii, pp. 996-997.

Describes the general characteristics of Huronian and Laurentian rocks and their contact relations, and gives the results of the microscopic examination of the quartzites, gneisses, and schists. Summarizes the facts showing the eruptive nature of the Laurentian gneiss.

32 —— On the relations of the Laurentian and Huronian on the north side of Lake Huron.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 236-239.

Discusses the relations of the two formations in this region.

33 **Barrett** (S. T.). Note on the paper in the November number of this journal on "A new Oriskany fauna in Columbia County, N. Y."

Am. Jour. Sci., 3d ser., vol. xlv, p. 72 (communicated).

Considers that this fauna extended to and reached a higher stage of development in Lower Devonian strata.

34 **Barton** (George H.). Bowlders formed in situ.

Tech. Quart., vol. v, pp. 401-403.

Refers to some granite bowlders of Montana and of eastern Massachusetts.

35 **Barus** (Carl). High temperature work in igneous fusion and ebullition, chiefly in relation to pressure.

U. S. Geol. Surv., Bull. No. 103, pp. 11-57.

Describes the apparatus used and gives results of experiments showing the pressure variations of certain high temperature (metallic) boiling points, the contraction of molten igneous rocks on passing from liquid to solid and the thermal capacity of igneous rocks, considered in its bearing on melting point and pressure.

36 —— Criticism of Mr. Fisher's remarks on rock fusion.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 140-141.

Discusses statements concerning the fusion points of certain rocks, in paper by O. Fisher, "Rigidity not to be relied upon in estimating the earth's age."

37 **Bascom** (Florence). The structure, origin, and nomenclature of the acid volcanic rocks of South Mountain.

Jour. of Geol., vol. i, pp. 813-832.

Describes the different structures which these acid rocks assume. Considers that these acid lava flows are similar to recent lavas found in the Yellowstone National Park and that the process of devitrifaction in these rocks is similar to that of crystallization in a fluid magma, except for the great length of time required. Reviews the nomenclature used by various authors in describing similar acid rocks.

37*a* **Baskerville** (Chas.), **Mitchell** (R. H.) and. An example of river adjustment.

See Mitchell (R. H.) and Baskerville (C.), 675.

38 **Baur** (G.). Notes on some little known American fossil tortoises.

Phila. Acad. Nat. Sci., Proc., 1893, part iii, pp. 411–430.

Reviews previous descriptions and classifications of some Cretaceous species of Wyoming and Colorado.

39 —— On the morphology of the skull in Mosasauridæ.

Jour. of Morph., vol. vii, pp. 1–22, pls. i–ii.

Reviews the literature on the characters of the skull of the Mosasauridæ, describes the skull of Platecarpus coryphæus Cope, found in the Cretaceous of Kansas, and includes remarks on the relations of the Mosasauridæ.

40 **Bayley** (William Shirley). Eleolite-syenite of Litchfield, Me., and Hawes's hornblende-syenite from Red Hill. N. H.

Geol. Soc. Am., Bull., vol iii, pp. 231–252.

Abstract: Am. Jour. Sci., 3d ser., vol. xliv, pp. 500–501.

Describes the megascopic and microscopic characters of the specimens and gives several chemical analyses. Concludes that of the two the New Hampshire rock is more nearly a normal eleolite-syenite.

41 —— Notes on the petrography and geology of the Akeley Lake region in northeastern Minnesota.

Minn. Geol. and Nat. Hist. Surv., 19th Ann. Rept., pp. 193–210.

States that the results of microscopic study of certain specimens mentioned in the 16th and 17th Minnesota Reports indicate that a different interpretation should be given them. Gives locality of specimens, with petrographic notes, a discussion of the character of specimens mentioned in each report, and a summary of results.

42 —— A fibrous intergrowth of augite and plagioclase, resembling a reaction rim, in a Minnesota gabbro.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 515–520.

Gives the petrographic results of a study of the Keweenawan gabbros in northeastern Minnesota.

43 —— The classification and naming of igneous rocks.

Science, vol. xxi, pp. 87–88.

Reviews papers on "The origin of igneous rocks" and "The eruptive rocks of Electric Peak and Sepulchre Mountain, Yellowstone National Park," by J. P. Iddings, and discusses the principles of the classification of igneous rocks.

44 —— A fulgurite from Waterville, Me.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 327–328.

45 —— Striated garnet from Buckfield, Me.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 79–80 (communicated).

46 —— The basic massive rocks of the Lake Superior region.

Jour. of Geol., vol. i, pp. 433–456, 587–596, and 688–716.

Gives historical sketch of the gabbros and allied rocks, and discusses the question of the separation of the gabbros from the diabases. Reviews the literature concerning the basic massive rocks of the Lake Superior region and describes the position of the gabbros of northeastern Minnesota, with a petrographic description of the normal phase of gabbro.

47 **Bayley** (William Shirley). The eruptive and sedimentary rocks of Pigeon Point, Minn., and their contact phenomena.

U. S. Geol. Surv., Bull. No. 109, pp. 11-121, pls. i-xvi, figs. 1-15.

Describes the general distribution and relations of these rocks, the petrographic characters of the olivine-gabbro, diabase, red rock, contact rocks of olivine-gabbro and red rock, fragmental rocks, and the contact belt between the sedimentary and other rocks. Discusses the origin of the red rock.

48 —— Actinolite magnetite schists from the Mesabi iron range, in northeastern Minnesota.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 176-180.

Describes the petrographic characteristics of the rocks and remarks on their similarity to certain schists of the Penokee series.

49 **Beachler** (Charles S.). Keokuk group of the Mississippi Valley.

Am. Geol., vol. x, pp. 88-96.

Reviews the literature concerning this formation and gives a table of typical sections in Missouri, Indiana, Illinois, and Kentucky. Describes several exposures of the group.

50 —— Erosion of small basins in northwestern Indiana during the time preceding the Pleistocene period.

Am. Geol., vol. xii, pp. 51-53.

Describes the general features of a deep basin in Montgomery County and the character of the glacial deposits that were laid down in it.

51 **Beadle** (H. M.). The persistence of ores in lodes in depth. The Empire lode.

Eng. and Min. Jour., vol. lv, pp. 154-155.

Remarks on the evidences found in mines at Butte, Mont., concerning the formation of lodes in depth, with a description of the Empire lode.

52 **Becker** (George F.). Finite homogeneous strain, flow, and rupture of rocks.

Geol. Soc. Am., Bull., vol. iv, pp. 13-90.

Abstract: Am. Geol., vol. xi, p. 411 (¾ p.).

Discusses the general conditions of displacements, simple and compound strains, tangential strain, relation of stress and strain, and the viscosity, flow, and rupture of matter. Describes their geologic applications and reviews the theories of slaty cleavage.

53 —— Fisher's new hypothesis.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 137-139.

Refers to paper by O. Fisher "Rigidity not to be relied upon in estimating the earth's age," and discusses the bearing of oceanic tides on the theory of the viscosity or rigidity of the earth.

54 —— Quicksilver ore deposits.

U. S. Geol. Surv., Min. Res., 1892, pp. 139-168.

Describes the occurrence of mercurial deposits in the United States and foreign countries. Discusses the opinions of other writers concerning the origin of these deposits. Concludes that the usual association of minerals shows precipitation from solution which took place in thermal springs of volcanic origin to be the ordinary genetic process. The deposits occur as fissure veins, impregnations, and in zones of broken country rock. Tables of production.

55 **Beecher** (Charles E.). Development of the Brachiopoda. Part II. Classification of the stages of growth and decline.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 133–155.

Abstract: Am. Geol., vol. x, pp. 253–255.

Reviews the literature of the subject and discusses the observed stages of the growth of brachiopods and their limitations.

56 —— Notice of a new Lower Oriskany fauna in Columbia County, New York, with an annotated list of fossils by J. M. Clarke.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 410–414.

Discusses the relations of the deposits of the region and concludes that the fauna are transitional.

57 —— Symmetrical cell development in the Favositidæ.

Conn. Acad. Arts Sci., Trans., vol. viii, part 2, pp. 215–219.

Describes the process of cell development and a symmetrical system of intermural cell multiplication observed in a specimen of Michelinia convexa D'Orbigny from the Corniferous limestone.

58 —— The development of a Paleozoic coral.

Conn. Acad. Arts Sci., Trans., vol. viii, part 2, pp. 207–214.

Describes the development of Pleurodictyum lenticulare. Concludes that its non-tabulate feature is without special consequence in considering the relations with other tabulate poriferous genera and that the development of mural pores is identical or homologous with the process of gemmation.

59 —— Larval forms of trilobites from the Lower Helderberg group.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 142–147.

Abstract: Am. Geol., vol. xii, pp. 334–335 (½ p.).

Describes and figures some larval forms of the trilobites, Phæthonides and Acidaspis, found in the Helderberg Mountains of New York and gives a classification of the stages of development.

60 —— A larval form of Triarthrus.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 378–379.

Describes an earlier stage in the development than that described by C. D. Walcott in 1879.

61 —— On the thoracic legs of Triarthrus.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 467–470.

Describes and illustrates specimens showing the presence and structure of thoracic legs in Triarthrus becki Green.

62 —— Revision of the families of Loup-bearing Brachiopoda: The development of Terebratalia obsoleta Dall.

Conn. Acad. Arts Sci., Trans., vol. ix, pp. 376–399.

Abstract: Am. Geol., vol. xii, pp. 188–190.

63 —— Ueber die Entwickelung der Brachiopoden.

Neues Jahrb. f. Min., etc., Band I, Heft 1, 1892, pp. 178–197.

Describes the general structure of brachiopods and the characteristics of several orders and gives a list of genera of each order.

64 —— and **Schuchert** (C.). Development of the brachial supports in Dielasma and Zygospira.

Wash. Biol. Soc., Proc., vol. viii, pp. 71–78, pl. x.

Describes the development of the loop in Dielasma turgida, as shown by a specimen from the Lower Carboniferous of Kentucky, the development of the brachial supports in Zygospira recurvirostra, and gives a statement of observations and correlations.

64*a* **Beecher** (Charles E.), **Dodge** (W. W.) and. On the occurrence of Upper Silurian strata near Penobscot Bay, Maine.

See Dodge (W. W.) and Beecher (C. E.), 253.

65 **Bell** (Robert). Report on the Sudbury mining district. With an appendix by Prof. George H. Williams.

Canada Geol. Surv. Reports, vol. v, new series, part i, 1890-91, Report F, 91 pp.

Abstract: Am. Geol., vol. ix, pp. 269-270.

Describes the Laurentian and Huronian rocks of the region, the occurrence of nickel and copper and their mineral association in these rocks, and discusses the origin of the ore bodies.

66 —— [Post-Glacial outlet to the Great Lakes.]

Geol. Soc. Am., Bull., vol. iv, pp. 425-427.

In discussion of paper by G. Frederick Wright "The supposed Post-Glacial outlet of the Great Lakes through Lake Nipissing and the Mattawa River."

67 **Benedict** (A. C.) Petroleum in Indiana.

Ind. Dept. Geol. and Nat. Hist., 17th Rept., 1891, pp. 306-325.

Gives a historical sketch of petroleum and an account of the extent of the Indiana oil field and sections of oil wells in various parts of the State.

67*a* —— **Elrod** (Moses W.) and. Geology of Wabash County [Indiana].

See Elrod (M. W.) and Benedict (A. C.), 291.

68 **Bierbauer** (Bruno). A check-list of the Paleozoic fossils of Wisconsin, Minnesota, Iowa, Dakota, and Nebraska.

Minn. Acad. Nat. Sci., Bull., vol. iii, No. 2, pp. 206-247.

Contains a table giving the names of the fossils and the state and formation in which they occur.

69 **Bigney** (A. J.). Preliminary notes on the geology of Dearborn County, Indiana.

Ind. Acad. Sci., Proc., 1891, pp. 66-67.

States that the principal formation is a blue limestone of Silurian age. Briefly describes the glacial drift exposures.

70 **Birkinbine** (John). [Occurrence of titaniferous iron ore.]

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 277-278.

In discussion of paper by H. B. C. Nitze, "The magnetic iron ores of Ashe County, N. C."

71 **Bishop** (Irving P.). Report on the development of the salt industry of central New York for the year 1891.

N. Y. State Mus., 45th Ann. Rept., pp. 53-61.

Gives several sections as shown by well borings at different localities.

72 **Blake** (William P.). Association of apatite with beds of magnetite.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 159-160.

Mentions examples of such association in New York, Missouri, Utah, and New Jersey.

73 —— [Vein structure.]

Am. Inst. Min. Engrs., Trans., vol. xxi, p. 873.

In discussion of paper by Ernest Wiltsee, "Notes on the geology of the Half-Moon Mine, Pioche, Nev."

74 **Blake** (William P.). The mineral deposits of southwest Wisconsin.

Am. Geol., vol. xii, pp. 237-248.

Describes the geology of the region, the forms of the ore bodies and the character and structure of the blende deposits, with remarks on smithsonite, blende, barite, and marcasite ores.

75 —— The persistence of ores in lodes in depth.

Eng. and Min. Jour., vol. lv, p. 3.

Abstract: North of England Inst. of Min. and Mech. Engrs., Trans., vol. xlii, part v, p. 404 (½ p.).

Remarks on the independence of lode formation of any superficial phenomena and on the evidences of lateral secretion and vein filling in depth in the mines at Butte, Mont., and concludes that lode mineralization is deep seated and in a homogeneous rock formation may extend downward to and beyond the limit that mining operations can be conducted.

76 —— The progress of geological surveys in the State of Wisconsin. A review and bibliography.

Wis. Acad. Sci., Arts and Letters, vol ix, part i, pp. 225-231.

Reviews the literature of Wisconsin geology, particularly that relating to the lead and zinc deposits.

77 —— Age of the limestone strata of Deep Creek, Utah, and the occurrence of gold in the crystalline portions of the formation.

Am. Geol., vol. ix, pp. 47-48.

The limestone forms the ranges of hills and mountains and has been metamorphosed by the intrusion of granitic dikes. Its Carboniferous age is indicated by the contained fossils.

78 —— Relative abundance of gold in different geological formations.

Am. Geol., vol. ix, pp. 166-168.

Discusses the question as to the age of the chief gold-bearing formations in the United States.

79 **Blandy** (John F.). The persistence of ores in lodes in depth.

Eng. and Min. Jour., vol. lv, pp. 75-76.

Remarks on the evidences of lateral secretion and the comparatively limited depth to which mining has yet been carried.

80 —— Some notes on the geology of Arizona.

Eng. and Min. Jour., vol. lvi, pp. 473-474.

Describes the geology of portions of Arizona, with particular reference to the Triassic of the southern part of the Territory.

81 **Boyd** (Charles R.). The Indiana natural gas field.

Eng. and Min. Jour., vol. lv, pp. 440-441.

Describes the geologic structure of the region, illustrated by two cross sections.

82 —— The Wythe lead and zinc mines, Virginia.

Eng. and Min. Jour., vol. lv, pp. 561-562 and 586.

Gives a historical sketch of mining operations in this vicinity and describes the character of the ore and its manner of treatment.

83 **Boyle** (Cornelius Breckinridge). A catalogue and bibliography of North American Mesozoic Invertebrata.

U. S. Geol. Surv., Bull. No. 102, pp. 7-315.

Part I comprises an author's list of all publications that contain a description of species referred to the Mesozoic. Part II embraces a list of all names applied to Mesozoic species from North American rocks.

84 **Branner** (John C.). The mineral waters of Arkansas.

Ark. Geol. Surv., Rept. for 1891, vol. i, pp. 1-144.

Abstract: Am. Jour. Sci., 3d ser., vol. xlv, p. 73 (3 l.).

Describes the general characteristics and manner of occurrence of mineral waters in this State and gives many chemical analyses. Discusses the origin of their therapeutic qualities and the cause of some of the mineral waters being hot.

85 —— Observations upon the erosion in the hydrographic basin of the Arkansas River above Little Rock.

The Wilder Quarter-century Book, 1868-1893, pp. 325-337, Ithaca, N. Y., 1893.

Describes the methods of observation used in the study of the erosion of the Arkansas River basin in Arkansas, the physical and chemical character of the sediment, and gives analyses of the filtered river water and tables showing the relations of suspended to dissolved matter and the amount of material carried by the Arkansas River past Little Rock during the year 1887-88.

86 —— The coal fields of Arkansas.

U. S. Geol. Surv., Min. Res., 1892, pp. 303-306.

The coal fields lie in the drainage area of the Arkansas River. The coal-bearing rocks belong to true Coal Measure series, but the upper beds are probably Permo-Carboniferous, equivalent to those of Kansas and Nebraska. The lignites cover an area of 720 square miles, and are confined to the Tertiary area.

87 —— The supposed glaciation of Brazil.

Jour. of Geol., vol. i, pp. 753-772.

Reviews the theories on the glaciation of Brazil and the evidences on which they are based. Expresses the opinion that there are no phenomena of bowlders, gravels, clays, etc., that can be attributed to glacial agencies.

88 **Brewer** (William M.). The Warwhoop bauxite bank, Alabama.

Eng. and Min. Jour., vol. lv, p. 461.

Describes the body of bauxite occurring at this locality.

89 —— The brown ore deposit of Baker Hill, Ala.

Eng. and Min. Jour., vol. lv, pp. 77-78.

Gives a brief description of this ore body.

90 —— Some Alabama gold-mining districts.

Eng. and Min. Jour., vol. lv, p. 486.

Describes the occurrence of gold in parts of Cleburne and Randolph counties, Ala.

91 —— The Coosa coal field in Alabama.

Eng. and Min. Jour., vol. lvi, pp. 7-8.

Describes briefly the geologic structure of the region, with remarks on the occurrence of the coal.

92 **Broadhead** (G. C.). The Cambrian and Ozark series.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 57-60.

Refers to different papers on the Ozark series. Gives the section of the St. Louis well to a depth of 3,843 feet, indicating the succession of the limestone and sandstone beds and the author's general section in Madison County, Mo., and concludes that the evidence does not at present warrant a new classification.

93 **Broadhead** (G. C.). The correct succession of the Ozark series.

Am. Geol., vol. xi, pp. 260–268.

Reviews statements of F. L. Nason in paper "Iron ores of Missouri." Gives the lithologic characters of the beds in the Ozark region and discusses the evidence indicating the succession of the sandstone and magnesian limestone series.

94 —— A critical notice of the stratigraphy of the Missouri Paleozoic.

Am. Geol., vol. xii, pp. 74–89.

Describes the lithologic character of the strata resting on the Archean and the occurrence and geographic distribution of the magnesian limestones and the sandstones, and gives the vertical section of a well at St. Louis, to a depth of 3,843 feet, showing the presence of Quaternary, Carboniferous, Lower Silurian, and Upper Cambrian beds. Mentions the principal fossil forms found in the several subdivisions of the Paleozoic in Missouri.

96 **Brown** (S. B.). The Lower Coal Measures of Monongalia and Preston counties, W. Va.

Am. Geol., vol. ix, pp. 224–228, 2 figs.

Describes the topographic features of the region, and gives vertical sections at various localities which show the position and thickness of the several coal seams.

97 **Brumell** (H. Peareth H.). Notes on manganese in Canada.

Am. Geol., vol. x, pp. 80–88.

Describes the ore deposits at various localities and gives several chemical analyses of the ores. The crystalline ores are found in the Lower Carboniferous and the bog ore deposits in beds of recent formation.

98 —— Report on natural gas and petroleum in Ontario prior to 1891.

Canada Geol. Surv., Reports, vol. v, new series, part ii, 1890–91, Report Q, 94 pp.

Discusses the character of the hydrocarbons, with extracts from different publications bearing on the subject. Gives a record of various boring operations up to the close of 1890. Illustrated by four maps and sections. Appendix C is a bibliography of the subject.

99 —— Notes on the occurrence of petroleum in Gaspé, Quebec.

Geol. Soc. Am., Bull., vol. iv, pp. 241–244.

Abstract: Am. Geol., vol. xii, pp. 120–121 (½ p.).

The oil-bearing formation is found in sandstones of Lower Devonian or Upper Silurian age. Gives an account of recent work in this area.

100 —— On the geology of natural gas and petroleum in southwestern Ontario.

Geol. Soc. Am., Bull., vol. iv, pp. 225–240.

Abstract: Am. Geol., vol. xii, p. 120 (½ p.).

Describes the character of the Devonian, Silurian, and Cambro-Silurian strata of this region from the sections shown by several wells. Describes the occurrence of oil in the Corniferous and Medina formations and the occurrence of gas in Clinton, Medina, Niagara, Onondaga, and Trenton rocks.

101 **Bryson** (John). The glacial geology of Marthas Vineyard compared with that of Long Island.

Am. Geol., vol. xi, pp. 210-212 (correspondence).

Discusses the evidences indicating the character of the glacial phenomena on Long Island, and compares them with those of Marthas Vineyard as described in the report on the geology of Marthas Vineyard, by N. S. Shaler.

102 —— The drift mounds of Olympia and Long Island.

Am. Geol., vol. xii, pp. 127-129 (correspondence).

Describes the sand dunes of Long Island and compares them with the drift mounds of Olympia previously described by G. O. Rogers in the June number, 1893, of the American Geologist.

103 —— Origin of Peconic Bay and Shinnecock Hills, Long Island.

Am. Geol., vol. xii, pp. 402-403 (correspondence).

Considers their formation due, in part, at least, to subglacial streams.

104 **Buell** (Ira M.). Geology of the Waterloo quartzite area.

Wis. Acad. Sci. Arts and Letters, vol. ix, part ii, pp. 255-274.

Describes the structural features and lithologic characters of some Precambrian strata in southeastern Wisconsin.

C.

105 **Cadell** (Henry M.). The Yellowstone region and its geysers.

Scottish Geog. Mag., vol. viii, pp. 233-248.

Describes the topographic and geologic features of the region and the thermal springs and their deposits. Illustrated by a colored geologic sketch map and reproductions of photographs of the Mammoth Hot Springs and of the Giant Geyser.

106 **Call** (R. Ellsworth). Artesian wells in Iowa.

Science, vol. xix, pp. 310-311.

Abstract: Iowa Acad. Sci., Proc., vol. i, part ii, pp. 57-63.

Mentions the localities where artesian waters have been and may be found. Gives section of deep well at Cedar Rapids. Accompanied by sketch map.

107 —— The Tertiary silicified woods of eastern Arkansas.

Iowa Acad. Sci., Proc., vol. i, part ii, pp. 37-43.

Gives a list of localities where specimens are found and the vertical section of two most important localities. Discusses the evidence as to the cause of the silicification. Gives a description of the occurrence of silicified wood in Iowa.

107*a* —— **Keyes** (C. R.), and. On a Quaternary section 8 miles south east of Des Moines, Iowa.

See Keyes (C. R.) and Call (R. E.), 531.

108 **Calvin** (Samuel). Notes on the difference between Acervularia profunda Hall and Acervularia davidsoni Edwards and Haime.

Am. Geol., vol. ix, pp. 355-358. Iowa Acad. Sci., Proc., vol. i, part ii, pp. 30-32.

States the difference between the two species.

109 **Calvin** (Samuel). The relation of the Cretaceous deposits of Iowa to the subdivisions of the Cretaceous proposed by Meek and Hayden.

Am. Geol., vol. xi, pp. 300–307. Iowa Acad. Sci., Proc., vol. i, part iii, pp. 7-12.

Describes the lithologic characters and gives a section of the Cretaceous deposits along the Big Sioux River. Refers to the descriptions of the Cretaceous of this region by Dr. C. A. White, and Meek and Hayden, and describes the processes of sedimentation and movements of elevation and subsidence during Cretaceous time.

110 —— On the structure and probable affinities of Cerionites dactylioides Owen.

Am. Geol., vol. xii, pp. 53–57. Iowa Acad. Sci., Proc., vol. i, part iii, pp. 13–15.

Refers to previous descriptions of Cerionites. Describes its fossil form and its probable characteristics while living.

111 —— Notes on some of the fossil corals described by David Dale Owen in his report of work done in the autumn of 1859, with observations on the Devonian species, Phillisastrea gigas of later authors.

Am. Geol., vol. xii, pp. 108–112.

Refers to species described by Owen and their identification and classification by later writers.

112 —— Notes on a collection of fossils from the Lower Magnesian limestone from northeastern Iowa.

Am. Geol., vol. x, pp. 144–148. Lab. Nat. Hist., State Univ. of Iowa, Bull., vol. ii, No. 2, pp. 189–193.

Refers to previous publications on the fossils of the Lower Magnesian series and describes Straparollus claytonensis, n. sp.; Straparollus pristiniformis, n. sp.; Raphistoma pepinense, Meek; Raphistoma multivolvatum, n. sp.; Raphistoma paucivolvatum, n. sp.; Murchisonia, sp.; Orthoceras primigenium Vanuxem; and Cyrtoceras luthei, n. sp., which belong either to the Gasteropoda or Cephalopoda, found in the cherty layers of the series.

113 —— Cretaceous deposits of Woodbury and Plymouth counties, Iowa, with observations on their economic uses.

Iowa Geol. Surv., vol. i, 1st Ann. Rept., 1892, pp. 147-169.

Describes the character and extent of the Woodbury shales, Niobrara chalks and clays of this region, giving sections shown at various localities.

114 —— Report on some fossils collected in the Northwest Territory, Canada, by naturalists from the University of Iowa.

Lab. Nat. Hist., State Univ. of Iowa, Bull., vol. ii, No. 2, pp. 163–165.

Describes Pentamerus decussatus Whiteaves, found in Upper Silurian strata near Lake Winnipeg.

115 —— Two unique spirifers from the Devonian strata of Iowa.

Lab. Nat. Hist., State Univ. of Iowa, Bull., vol. ii, No. 2, pp. 165–167.

Describes and figures Spirifera urbana Calvin and Spirifera macbridei Calvin.

116 **Calvin** (Samuel). A geological reconnoissance in Buchanan County, Iowa.

Lab. Nat. Hist., State Univ. of Iowa, Bull., vol. ii, No. 2, pp. 177-189.

Describes outcrops of Devonian strata in this region, mentions the fossils found in them, remarks on the irregularity in the line of outcrops and suggests it is due to an uplift at the close of the Niagara.

117 **Campbell** (John T.). Source of supply to lateral and medial glacial moraines.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 255-256.

Discusses the origin of the debris of glaciers where no mountains or hillsides are present.

118 **Campbell** (Marius R.). [Correlation of coal seams of Big Stone Gap coal field of Virginia and Kentucky.]

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 1004-1005.

In discussion of paper by James M. Hodge, "The Big Stone Gap coal field."

119 —— Geology of the Big Stone Gap coal field of Virginia and Kentucky.

U. S. Geol. Surv., Bull. 111, pp. 13-106, pls. i-vi, figs. 1-3.

Describes the topographic features and geologic structure of the region. Reviews the previous work and gives a description of the lithologic characters and distribution of the different formations and of the coal outcrops, and discusses their correlation with coal seams in other parts of the Appalachian belt.

119*a* **Cannon** (George L., jr.). Notes on a discovery of radiolites, Austinensis roemer (?).

Colo. Sci. Soc., Proc., vol. iv, pp. 75-76.

Brief note on the occurrence of this fossil in the Niobrara Cretaceous.

119*b* —— Notes on the geology of Palmer Lake, Colo., and the Paleozoic exposures along the Front Range.

Colo. Sci. Soc., Proc., vol. iv, pp. 224-234, with map.

Describes the topography of the region, the granites, the occurrences of Paleozoic rocks, and the Jura-Trias, Cretaceous, Tertiary, and Quaternary beds which occur in this vicinity.

119*c* —— The geology of Denver and vicinity.

Colo. Sci. Soc., Proc., vol. iv, pp. 235-270.

Discusses the causes of the abscence of Paleozoic measures and describes the Triassic, Jurassic, Cretaceous, Tertiary, and Quaternary beds of the Denver Basin. Mentions some of the fossils found at different horizons.

119*d* **Cardeza** (J. T. M.), **Rand** (Theodore D.), **Jefferis** (Wm. W.), and. Mineral localities of Philadelphia and vicinity.

See Rand (T. D.), Jefferis (W. W.), and Cardeza (J. T. M), 769.

120 **Carlyle** (W. A.). Notes on a great silver camp.

Can. Rec. Sci., vol. v, pp. 403-412.

Describes the geology of the mining districts of Leadville and Aspen, Colo., and the occurrence and character of the ore bodies.

121 **Cary** (Austin). A study in foot structure.

Jour. of Morph., vol. vii, pp. 305–315, pl. xviii.

The paper is based on a study of a Perissodactyl from the Bridger Eocene Palæosyops and includes remarks on the theoretical applications.

122 **Case** (E. C.), **Bailey** (E. H. S.) and. On the composition of some Kansas building stones.

See Bailey (E. H. S.) and Case (E. C.), 22.

123 **Case** (William H.). The Bertha zinc mines at Bertha, Va.

Eng. and Min. Jour., vol. lvi, pp. 292–294.

Describes briefly the geological structure of the region and the occurrence and character of the ore, illustrated by map and cross sections.

124 **Chalmers** (Robert). Height of the Bay of Fundy coast in the Glacial period relative to sea level, as evidenced by marine fossils in the bowlder clay at St. John, New Brunswick.

Geol. Soc. Am., Bull., vol. iv, pp. 361–370.

Abstract: Am. Geol., vol. xi, pp. 176–177.

Describes the bowlder clay and the sections displayed at two localities and mentions the occurrence of certain fossil marine shells. Discusses the height of the land and the mode of deposition of the bowlder clay, the oscillations of the ice sheet, and the climatic conditions during the deposition of the Leda clay and Saxicava sands.

125 **Chaney** (L. W., jr.). Cryptozoon minnesotense in the Shakopie limestone at Northfield, Minn.

Minn. Acad. Nat. Sci., Bull., vol. iii, No. 2, pp. 280–284.

Describes the outcrops of this limestone in this locality and discusses the question of the organic origin of the Cryptozoon specimens found in them.

126 **Chamberlin** (T. C.). The horizon of drumlin, osar, and kame formation.

Jour. of Geol., vol. i, pp. 255–267.

Abstract: Am. Geol., vol. xii, pp. 122–123.

Defines the term englacial and describes the movements of englacial material from the bottom of the ice sheet to limited heights and the agents of its transportation. Describes the drumlin area of Wisconsin and the bowlder trains and bowlder belts of Ohio, Indiana, and Illinois. Concludes that the osars and kames of the latter region are basal material.

127 —— The diversity of the Glacial period.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 171–200.

Reviews the different theories concerning the unity or diversity of the Glacial period, with special reference to and quotations from paper by G. F. Wright, "Unity of the Glacial period." Discusses the evidence as to the existence of the terminal moraine at certain points in New Jersey and the character of certain deposits in Delaware Valley and portions of Ohio. Refers to the gorge cutting of the Delaware and to concurrent erosion over the old drift surface, as proof of an interval between the earlier and later drift formation.

128 —— The altitude of the eastern and central portions of the United States during the Glacial period.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, p. 250.

Gives a general summary of the author's conclusions.

129 **Chamberlin** (T. C.). The nature of the englacial drift of the Mississippi basin.

Jour. of Geol., vol. i, pp. 47-60.

Discusses the cause of the movement of basal material upward into the body of a glacier. Describes the course of several bowlder belts through Indiana, their relation to terminal moraines, and the characters that distinguish them from the average bowlders of the till, and concludes that they represent an example of englacial and superglacial transportation.

130 —— Some additional evidences bearing on the interval between the glacial epochs.

Wis. Acad. Sci. Arts and Letters, vol. viii, pp. 82-86.

The evidences point to the conclusion that toward the close of the earlier glacial epoch the altitude of the continent was low, in the interval it became higher, and during the later epoch its valley deposits were carried down the trenches formed during the interval.

131 —— [Glacial succession in the United States.]

Abstract: Am. Geol., vol. xii, pp. 227-228.

Paper read before the World's Congress on Geology.

132 —— and **Salisbury** (R. D.). On the relationship of the Pleistocene to the Prepleistocene formations of the Mississippi basin south of the limit of glaciation.

Abstract: Am. Nat., vol. xxvi, pp. 48-49.

Paper described in Record for 1891.

133 **Chapman** (E. J.). Note on the Belmont gold veins of Peterboro County, Ontario.

Can. Roy. Soc., Trans., vol. xi, sect. iv, pp. 51-52.

Describes the country rock of the region and the vein phenomena of the ore bodies.

134 —— On the corals and coralliform types of Paleozoic strata.

Can. Roy. Soc., Trans., vol. x, sect. iv, pp. 39-48.

In a tabular synopsis classifies the cœlenterates into five subdivisions.

135 **Chapman** (Henry C.). Note on the geology of Mount Desert Island.

Phila. Acad. Nat. Sci., Proc., 1892, part iii, p. 350.

Brief description of the geology of the island.

135*a*. **Charlton** (Thomas). [Occurrence of nickel.]

Colo. Sci. Soc., Proc., vol. iv, pp. 420-421.

In discussion of paper by Philip Argall on "Nickel, the occurrence, geological distribution, and genesis of its ores," describes the occurrence of nickel in the Gem Mine, Fremont County, Colo.

136 **Chatard** (Thomas M.). Phosphate chemistry as it concerns the miner.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 160-175.

Discusses some problems of phosphate analysis and describes the processes to be followed in making a chemical analysis of a natural phosphate.

137 **Church** (John A.). The cause of faulting.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 782–792.

Discusses the different explanations of the cause of faulting and their insufficiency to account for local faults of moderate extent. Considers that fissuring of rocks by compression may occur without dislocation and that, in the movement of rocks, both walls participate in the movement and the fault becomes shortened.

138 —— Faulting in veins.

Eng. and Min. Jour., vol. liii, pp. 469–470, 613–614, and 637–638 (correspondence).

Reviews statement of Albert Williams, jr., concerning the occurrence of veins on the lines of fault fissures and describes the characteristics of vein formations.

138*a*—— [Vein structure.]

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 871–872.

In discussion of paper by Ernest Wiltsee, "Notes on the geology of the Half-Moon Mine, Pioche, Nev."

139 **Clark** (William Bullock). The Mesozoic Echinodermata of the United States.

U. S. Geol. Surv., Bull. No. 97, pp. 13–101, pls. i–l.

Abstracts: Am. Nat., vol. xxvii, p. 1079 (⅓ p.); Johns Hopkins Univ. Circ., vol. xii, pp. 51–52.

Gives a bibliography of North American Echinodermata, a description of the determining characteristics of the different species, and tables showing their geologic range in North America and the specific names employed by writers on the Mesozoic Echinodermata.

140 —— A preliminary report on the Cretaceous and Tertiary formations of New Jersey.

N. J. Geol. Surv., Ann. Rept. 1892, pp. 169–239, pls. iv–vi.

Reviews the literature on the deposits of this region. Describes the topographic features and the lithologic and structural characters of the Cretaceous and Tertiary formations. Gives lists of fossils found in the several marl beds and discusses the origin, character, and manner of occurrence of glauconite.

141 —— The Eocene of the United States.

Johns Hopkins Univ. Circ., vol. xii, pp. 50–51.

Describes the characters of the Eocene deposits of the Atlantic Coast, Gulf Coast, Pacific Coast, and interior regions.

142 —— Correlation Papers. Eocene.

U. S. Geol. Surv., Bull. No. 83, p. 159, pls. i–ii.

Abstracts: Am. Geol., vol. xii, p. 379 (⅔ p.); Am. Nat., vol. xxvi, pp. 330–332.

Describes the stratigraphy of the Eocene beds of the Atlantic Coast, Gulf States, and the Pacific Coast region, and gives lists of their contained fossils and discusses their correlation. Includes a bibliography of the papers on the Eocene of each of these regions.

142*a*—— **Williams** (G. H.) and. Reports on short excursions made by the geological department of the University during the autumn of 1891.

See Williams (G. H.) and Clark (W. B.), 1049.

143 **Clark** (William Bullock), **Williams** (G. H.) and. [Geology of Maryland.]

Maryland, its Resources, Industries, and Institutions, pp. 55-88, Baltimore, 1893.

Abstract: Am. Geol., vol. xii, pp. 396-398.

Includes a general description of the various geologic formations of Maryland.

144 **Clarke** (F. W.). Note on the constitution of ptilolite and mordenite.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 101-102.

145 **Clarke** (John M.). Notes on the genus Acidaspis; note on Coronura aspectans Conrad (sp.), the Asaphas diurus Green; observations on the Terataspis grandis Hall, the largest known trilobite.

N. Y. State Geologist, Tenth Ann. Rept., 1891.

Abstracts: Am. Jour. Sci., 3d ser., vol. xliii, pp. 158-159; Am. Geol., vol. ix, pp. 202-203.

146 —— On the structure of the carapace in the Devonian crustacean Rhinocaris, and the relation of the genus Mesothyra and the Phyllocarida.

Am. Nat., vol. xxvii, pp. 793-801.

Describes the structural characters of the typical species of Rhinocaris and compares them with those of Mesothyra and Phyllocarida.

147 —— The protoconch of Orthoceras.

Am. Geol., vol. xii, pp. 112-115.

Reviews the descriptions of the structure of the protoconch of the nautiloid Orthoceras, by Professor Hyatt and Dr. Branco, and describes remains from the Genesee shales of New York.

148 —— The discovery of Clymenia in the fauna of the Intumescens zone (Naples beds) of western New York, and its geological significance.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 57-63.

Describes and gives drawings of newly discovered and very perfect specimens of Clymenia from the lower part of the Upper Devonian, which has hitherto been considered an horizon marker for the uppermost Devonian only, especially in Europe.

See Hall, 383 and 384.

149 —— On Cordania, a proposed new genus of Trilobites.

N. Y. State Mus., 45th Ann. Rept., pp. 440-443.

Discusses the classification of certain species from the Helderberg and Hamilton groups.

150 **Claypole** (E. W.). A new gigantic placoderm from Ohio.

Am. Geol., vol. x, pp. 1-4.

Describes the lower jaw and teeth of this species found in the Cleveland shale near Berea, Ohio.

151 —— The head of Dinichthys.

Am. Geol., vol. x, pp. 199-207.

Describes particularly the plates and illustrates the skull of Dinichthys in three figures.

152 **Claypole** (E. W.). The tin islands of the Northwest.

Am. Geol., vol. ix, pp. 228-236.

Describes the structural characteristics of the igneous and sedimentary rocks that form the Black Hills, and the movements of elevation and subsidence that have occurred in the region. The cassiterite is confined to the granite veins, and is very finely and irregularly disseminated.

153 —— A new Coccostean-coccosteus Cuyahogæ.

Am. Geol., vol. xi, pp. 167-171.

Refers to previous descriptions of species of Coccosteus, and describes a new species from the Cleveland shale of Ohio.

154 —— The cladodont sharks of the Cleveland shale.

Am. Geol., vol. xi, pp. 325-331.

Abstract: Am. Nat., vol. xxvii, p. 1083 (½ p.).

Refers to the description of Cladodont fishes by Dr. Newberry, with remarks on the classification. Describes: Cladodus kepleri, Cladodus clarki, Cladodus sinuatus, Cladodus rivi-petrosi, Monocladodus clarki, and Monocladodus pinnatus.

155 —— The three great fossil placoderms of Ohio.

Am. Geol., vol. xii, pp. 89-99.

Describes the general characteristics of the fossils found in the Cleveland and Huron shales, with special reference to placoderms.

156 ——On three new species of Dinichthys.

Am. Geol., vol. xii, pp. 275-279.

Describes three new species, D. lincolni, D. clarki, and D. gracilis, from parts of the organs of the mouth, one from the Marcellus shale and the others from the Cleveland shale.

157 —— On a deep Preglacial river bed near Akron, Ohio.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, p. 259.

The evidence of the existence of the deep river bed is afforded by data obtained in sinking a deep well in the center of a pre-Glacial valley.

158 —— On the structure of the American pteraspidian, Palæaspis (Claypole), with remarks on the family.

Geol. Soc. Quart. Jour., vol. xlviii, pp. 542-561.

Gives a statement concerning the discovery of pteraspidian fishes in the Upper Silurian of Pennsylvania. Reviews some of the previous descriptions and classifications of these fossils. In a figure gives an attempted restoration of P. Americana and also gives an amended definition of Palæaspis.

159 —— A deep boring in the Pleistocene near Akron, Ohio.

Geol. Soc. Am., Bull., vol. iii, pp. 150-151.

Describes the surface geology of the region and the section exhibited by the boring.

160 —— The Upper Devonian fishes of Ohio.

Geol. Mag., dec. iii, vol. x, pp. 443-448.

Describes a deposit of shale which represents a transition period between the Carboniferous and Devonian, with remarks on some of the fishes found in the shale.

161 —— An episode in the history of the Cuyahoga River.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xli, p. 176 (9 l.).

162 **Cobb** (Collier). A recapture from a river pirate.

Science, vol. xxii, p. 195 (correspondence).

Describes phenomena caused by changes in the drainage of the Jackson River, Virginia.

163 **Cole** (A. H.). Palæaster eucharis Hall.

Geol. Soc. Am., Bull., vol. iii, pp. 512-514.

Abstract: Am. Geol., vol. xi, p. 120 (5 l.).

Quotes the description of Dr. Hall of his type specimen, and states wherein the present specimen differs from it.

164 **Coleman** (A. P.). Some Laurentian rocks of the Thousand Islands.

Can. Rec. Sci., vol. v, pp. 127-131.

Describes the Laurentian granites, gneisses, and quartzites of which these islands are composed.

165 ——The rocks of Clear Lake, near Sudbury.

Can. Rec. Sci., vol. v, pp. 343-346.

Describes the petrographic characters of gabbro, micropegmatite, and other rocks from a portion of the Sudbury district not heretofore examined, and compares them with collections from other portions of this district.

166 **Coman** (C. W.). Geological work in southern New Jersey.

N. J. Geol. Surv., Rept. for 1891, pp. 111-256.

Gives a general description of the surface deposits of the region and its artesian wells, with numerous sections as shown by the borings.

167 **Comstock** (Theodore B.). A preliminary report on parts of counties Menard, Concho, Tom Green, Sutton, Schleicher, Crockett, Valverde, Kinney, Maverick, Uvalde, Edwards, Bandera, Kerr, and Gillespie, Tex.

Texas Geol. Surv., 2d Rept. of Prog., 1891, pp. 43-54.

Describes the Lower Cretaceous and Jurassic strata of this region, its topographic features, artesian water, and mineral resources.

168 —— Valuable experiments in vein formation.

Science, vol. xix, p. 214.

Refers to some experiments made by Prof. von Streeruwitz and the conclusions drawn therefrom.

169 **Cooper** (A. S.) The genesis of petroleum and asphalt in California.

Sci. Amer. Suppl., vol. xxxvi, pp. 14738-14740.

Gives a detailed description of some deposits near Santa Barbara, with topographic map of the region and cross section, and includes brief remarks concerning similar deposits in other portions of California.

170 **Cope** (E. D.). On the characteristics of some Paleozoic fishes.

U. S. Nat. Mus., Proc., vol. xiv, pp. 447-463, pls. xxviii-xxxiii.

Abstract: Am. Geol., vol. ix, pp. 263-264.

Describes new species from the Permian of Nebraska and Texas and the characters of other fossils from the Paleozoic.

171 —— On the cranial characters of Equus excelsus.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, p. 285.

Distinguishes the general characters of the quagga from those of the horse.

172 **Cope** (E. D.). On a new horizon of fossil fishes.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, p. 285.

Mentions five species of fish from South Dakota, which differ in species, and some of them as to genus, from any hitherto known. They are Cenozoic in age, but it is not yet known to which division they belong.

173 —— The Cenozoic beds of the Staked Plains of Texas.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xli, p. 177 (4 l).

174 —— On a new form of Marsupialia from the Laramie formation.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xli, p. 177 (5 l).

175 —— A contribution to a knowledge of the fauna of the Blanco beds of Texas.

Phila. Acad. Nat. Sci., Proc., 1892, part ii, pp. 226-229.

Describes Testudo turgida Cope, Testudo pertenuis, sp. nov.; Mastodon successor, sp. nov.; Pliauchenia obtained from these beds, and concludes that the fauna of the Blanco beds are intermediate between the Loup Fork and Equus beds. The fauna represent species of large size, including mastodons, camels, and horses.

176 —— A new extinct species of Cyprinidæ.

Phila. Acad. Nat. Sci., Proc., 1893, part i, pp. 19-20.

Describes a new species from Illinois which is probably not earlier than the Pliocene.

177 —— On Tiaporus, a new genus of Teiidæ.

Am. Phil. Soc., Proc., vol. xxx, No. 137, pp. 132-133.

178 —— The osteology of the Lacertilia.

Am. Phil. Soc., Proc., vol. xxx, No. 138, pp. 185-221.

Especial reference is made to the necessities of the paleontology of the order and to the Nearctic fauna.

179 —— On some new and little known Paleozoic vertebrates.

Am. Phil. Soc., Proc., vol. xxx, No. 138, pp. 221-229.

Describes Holonema horrida, sp. nov.; Holonema rugosa Clayp.; Bothriolepis minor Newb.; Ganorhynchus oblongus, sp. nov.; Coccosteus macromus, sp. nov.; Megalichthys macropomus, sp. nov.; (?) Holoptychius filosus, sp. nov.; found in Chemung and Catskill beds of northern Pennsylvania.

180 —— On the skull of the dinosaurian Lælaps incrassatus Cope.

Am. Phil. Soc., Proc., vol. xxx, No. 138, pp. 240-245.

Describes two crania from the Laramie of Red Deer River, Canada.

181 —— On the genus Tomiopsis.

Am. Phil. Soc., Proc., vol. xxxi, No. 142, pp. 317-318.

Describes the characteristics of a tooth of this genus found in a bed of Neocene age in western Texas.

182 —— Report on paleontology of the vertebrata.

Texas Geol. Surv., 3d Ann. Rept., 1891, pp. 251-259; Am. Phil. Soc., Proc., vol. xxx, No. 137, pp. 123-131.

Refers to certain species found in the Fayette formation which indicate that it occupies the summit of the Tertiary. Describes Equus simplicidens, n. sp.; Creccoides osbornii Shufeldt, n. gen. et sp.; Testudo turgida, n. sp.; a Mesozoic Pycnodont, Microdus dumbelii, n. sp.; and Episcoposaurus haplocerus, n. sp., from the Triassic or Dockum beds.

183 **Cope** (E. D.). A preliminary report on the vertebrate paleontology of the Llano Estacado.

Texas Geol. Surv., 4th Ann. Rept., 1892, pp. 11-87, pls. i-xxiii.

Describes vertebrate remains found in the Dockum beds of the Trias, in the Loup Fork and Blanco beds of the Miocene, and in the Equus beds of the Pliocene.

184 **Cox** (Charles F.). On recently discovered deposits of diatomaceous earth in the Adirondacks.

N. Y. Acad. Sci., Trans., vol. xii, pp. 219-220.

Describes the deposits found in Herkimer County and gives a brief statement concerning the fossils found in them.

185 **Cragin** (F. W.). Observations on llama remains from Colorado and Kansas.

Am. Geol., vol. ix, pp. 257-260.

Describes some remains from volcanic ash beds of Kansas and from the Denver loess.

186 —— A contribution to the invertebrate paleontology of the Texas Cretaceous.

Texas Geol. Surv., 4th Ann. Rept., 1892, pp. 141-246, pls. xxiv-xlvi.

Description of genera and species of Cœlenterata, Echinodermata, Molluscoida, Mollusca, Gasteropoda and Cephalopoda from the Cretaceous series of Texas.

187 **Crane** (Agnes). The generic evolution of the Paleozoic brachiopoda.

Science, vol. xxi, pp. 72-74.

Am. Geol., vol. xi, pp. 400-406.

Refers to the work of different authors on the Paleozoic brachiopoda, with special reference to the work of Prof. James Hall and his recent memoirs "An introduction to the study of the genera of Paleozoic brachiopoda."

188 **Crawford** (J.). The geology of Nicaragua.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 261-270.

Describes the general geologic features. Concludes that there exists an Archean core upon which later rocks have been deposited unconformably, the latter being separated from each other by nonconformities. A glacial epoch existed synchronous with the same epoch in North America.

189 —— The peninsula and volcano of Cosigüina.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 270-274.

Describes the topographic features and orographic movements that have taken place in the region.

190 —— Recent discoveries in northeastern Nicaragua: granite hills, moutonnéd ridges and gold-containing lodes or reefs, and leads or placer mines.

Science, vol. xxii, pp. 269-272.

Describes the geology of the region and its mineral deposits.

191 —— Notes on earthquakes in Nicaragua, February 6, 1892.

Am. Geol., vol. x, pp. 115-118.

Describes the series of vibrations and oscillations which took place.

192 **Crook** (Alja Robinson). Ueber einige fossile Knochenfische aus der Mittleren Kreide von Kansas.

Palaeontographica, Band xxxix, 1892, pp. 107-124, pls. xv-xviii.

Describes some fossil fishes from the Cretaceous beds of Kansas, Protosphyrænidæ S. Woodward, Ichthyodectes anaides Cope, Ichthyodectes polymicrodus Cope, Portheus Cope.

193 **Crosby** (William O.). Geology of the Boston Basin.

Boston Soc. Nat. Hist., Occasional Papers IV, vol. i, part i, Nantasket and Cohasset, pp. 1-177.

Describes the older or granitic rocks and includes a description of the newer eruptive rocks of the region and the diabase and porphyrite dikes, by G. P. Merrill. Gives an account of the surface geology and its glacial deposits and phenomena.

194 —— Geology of Hingham, Mass.

Abstract: Boston Soc. Nat. Hist., Proc., vol. xxv, pp. 499-512.

Describes the geology of the region, gives a general vertical section of the strata and discusses the evidences of their geologic age.

195 —— The origin of parallel and intersecting joints.

Am. Geol., vol. xii, pp. 368-375.

Abstract: Tech. Quart., vol. vi, pp. 230-236.

Reviews the torsion theory of joints and the character and results of Daubrée's experiments.

196 **Cross** (Whitman). Igneous rocks from the coal and iron regions of Coahuila and Nueva Leon, Mexico, collected by R. T. Hill.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 119-120.

Describes the microscopic characters of specimens of basalt, diorite, hornblende-porphyrite, and augite-diorite; the former are considered deep-seated eruptives and the latter equivalent to the diorite, but from smaller masses and probably consolidated nearer the surface.

197 —— Post-Laramie deposits of Colorado.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 19-42.

Abstracts: Am. Geol., vol. x, pp. 256-257 (½ p.); Am. Nat., vol. xxvii, p. 471 (½ p.).

Describes the deposits occurring in different parts of the State and concludes that, in Colorado, the deposition of the conformable series of the Cretaceous ended with the coal-bearing Laramie, as the result of a long-continued continental elevation in this region, and when it began again the deposits were laid down in lakes or small seas. Discusses the fossil evidences bearing on the geologic age of the formation.

197*a* —— The Post-Laramie beds of Middle Park, Colorado.

Colo. Sci. Soc., Proc., vol. iv, pp. 192-213.

Gives historical sketch of the work done and reviews the literature on this region. Describes the character of the beds, called doleritic breccia by Marvine, and the constitution of the lignitic beds. Discusses the stratigraphic relations and reviews the evidence of the fossil flora as to the age of the Middle Park beds.

197*b* —— On a series of peculiar schists near Salida, Colo.

Colo. Sci. Soc., Proc., vol. iv, pp. 286-293.

Reviews the representation of the geology of the region on the Hayden Atlas, and indicates the general character of the necessary corrections. Describes the stratigraphy and general character of the schists, and discusses their origin and relationships.

198 **Cross** (Whitman) and **Eakins** (L. G.). A new occurrence of ptilolite.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 96-101.

Abstract: Am. Nat., vol. xxvii, p. 43 (½ p.).

Describes the chemical and mineralogic characteristics of the rock in which ptilolite occurs.

199 **Culver** (G. E.). Notes on a little known region in northwestern Montana.

Wis. Acad. Sci. Arts and Letters, Proc., vol. viii, pp. 187-205.

Abstract: Am. Geol., vol. xi, pp. 412-413 (½ p.).

Describes the general geographic features of the region, the structure of the plains and mountains and the strata exposed, with petrographic notes on the igneous rocks, chiefly diabase. Describes the character of the existing glaciers and the general features of former glaciers. Discusses the origin of the ice tongues of the eastern slope of the Rocky Mountains.

200 —— and **Hobbs** (Wm. H.). On a new occurrence of olivine diabase in Minnehaha County, S. Dak.

Wis. Acad. Sci. Arts and Letters, Proc., vol. viii, pp. 206-210.

Describes the decomposition of the rock and states that considerable erosion has taken place. Gives petrographic notes on thin sections examined.

201 **Cummins** (A.). Geology of the natural gas fields about Pittsburg.

Eng. and Min. Jour., vol. liv, pp. 106-107.

Describes the structural features of the region and the character of the strata through which the borings pass. Gives information concerning the pressure of gas and its diminution in the wells.

202 **Cummins** (W. F.). Report for 1891.

Texas Geol. Surv., 2d Rept. of Prog., 1891, pp. 27-42.

Describes the topographic and geologic features of the Staked Plains region, its artesian water supply and mineral resources.

203 —— Report on the geography, topography, and geology of the Llano Estacado or Staked Plains, with notes on the geology of the country west of the plains.

Texas Geol. Surv., 3d Ann. Rept., 1891, pp. 129-223.

Describes the topographic features of the region and the Quaternary, Tertiary, Cretaceous, and Triassic formations, and includes notes on the same formations and the Carboniferous occurring in the country west of the plains.

204 —— Notes on the geology of northwest Texas.

Texas Geol. Surv., 4th Ann. Rept., 1892, pp. 179-238.

Describes the general geology of the region and gives a table containing a list of Pleistocene and fresh-water shells of the region. Remarks on the removal of the entire Cretaceous, comprising 10,000 feet of strata and the absence of the Tertiary below the Loup Fork beds over the entire area. Gives sections of the Tule, Blanco, and Loup Fork beds, and a description of the Permian of Texas and other parts of the United States and Europe, and of the occurrence of copper ore in these beds.

205 **Cummins** (W. F.). Tucumcari Mountain.

Am. Geol., vol. xi, pp. 375–283.

Reviews the previous publications concerning this region and refers to criticisms on the author's report in the Third Annual Report of the Texas Geological Survey, by Jules Marcou.

206 —— The Texas meteorites.

Texas Acad. Sci., Trans., vol. i, pp. 14–18.

Gives a historical sketch of Texas meteorites.

207 —— Geology of Tucumcari, New Mexico.

Science, vol. xxi, pp. 282–283.

Gives a list of fossils found at this locality and concludes that the strata are Triassic, Cretaceous, and Tertiary. Refers to certain statements concerning the geology of the region.

208 —— **Dumble** (E. T.) and. The Kent section and Gryphæa tucumcarii Marcou.

Am. Geol., vol. xii. pp. 309–314.

Gives the section occurring at this locality in western Texas, with a list of fossils found, representing three divisions of the Cretaceous.

209 **Cushing** (H. P.). The movement of Muir glacier.

Am. Geol., vol. xi, pp. 276–278 (correspondence).

Refers to criticisms by G. F. Wright.

210 —— Notes on the geology of the vicinity of Muir glacier.

Nat. Geog. Mag., vol. iv, pp. 56–62.

Describes the strata, consisting of argillites and limestones, in this region. A few fossils found indicate their Paleozoic age. The older eruptive rocks are diorites, which, with the sedimentaries, are cut by small dikes of later date.

D.

211 **Dale** (T. Nelson). On the structure and age of the Stockbridge limestone in the Vermont valley.

Abstract: Geol. Soc. Am., Bull., vol. iii, pp. 514–519.

The main feature of the region is a complex anticlinal of gneiss and Cambrian quartzite and schist, flanked by Cambrian limestone and Lower Silurian limestone. Owing to faults at some points the base of the Stockbridge limestone, with its Cambrian fauna, is exposed; in others, the top with Lower Silurian fauna. Accompanied by sketch map.

212 —— The Rensselaer grit plateau in New York.

U. S. Geol. Surv., 13th Ann. Rept., part ii, pp. 297–340, pls. xcvii–ci, figs. 18–41.

Describes the petrographic characters of the Cambrian and Silurian rocks in this region and mentions the fossils found in them. Discusses the geologic structure and relations of the formations and includes a table exhibiting the stratigraphic, petrographic, and paleontologic results obtained.

213 —— On plicated cleavage-foliation.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 317–319.

Describes an occurrence of this structure at West Rutland, Vt.

214 **Dall** (William Healey). Grand Gulf formation.

Science, vol. xx, pp. 164-165 and 319-320.

Describes the conditions of sedimentation during the Grand Gulf period and gives the names of fossils found in some of the deposits.

215 —— Tertiary mollusks of Florida.

Wagner Free Inst. of Sci., Trans., vol. iii, parts i and ii, 1892, pp. 1-446, pls. 1-22.

Abstract: Am. Jour. Sci., 3d ser., vol. xlv, p. 441 (½ p.).

Reviews the opinions of other writers on the Tertiary beds and their fauna. Describes the processes of deposition in the Southeastern States during Tertiary time and locates and describes many species found in these beds.

216 —— and **Harris** (Gilbert Dennison). Correlation papers. Neocene.

U. S. Geol. Surv., Bull. No. 84, 349 pp., pls. i-iii, figs. 1-43.

Abstracts: Am. Jour. Sci., 3d ser., vol. xlv, pp. 351-354; Am. Geol., vol. xii, pp. 399-402.

Gives a summary of the knowledge of the Neocene deposits of the Atlantic and Gulf coasts, of the Pacific Coast and Canada, and of the supposed Neocene of the interior of the United States, and includes a list of names applied to Cenozoic beds.

217 **Dana** (James D.). On subdivisions in Archean history. Part I.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 455-462.

Discusses the subdivisions of Archean time as based on—1, kinds of rocks; 2, stratification; and 3, physical and biological conditions.

218 —— Additional observations on the Jura-Trias trap of the New Haven region.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 165-169.

Describes the outcrop of a trap dike in this region and states that the outflow was laccolithic. Discusses two hypotheses concerning the origin of the trap belts.

219 —— New England and the Upper Mississippi basin in the Glacial period.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 327-330.

Abstract: Jour. of Geol., vol. i, pp. 847-849.

Considers that the cause of divergence of opinion concerning the unity of the glacial period is due to the different conditions in the eastern and western portions of the glacial area consequent on meteorological differences in the two regions. Describes the general conditions existing during the glacial period.

220 **Darton** (Nelson Horatio). Fossils in the "Archean" rocks of central piedmont Virginia.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 50-52.

Brief description of the occurrence of roofing slates in the piedmont plain west of Richmond, in which fossils, determined by C. D. Walcott as of Lower Silurian age, have been found.

221 **Darton** (Nelson Horatio). The stratigraphic relations of the Oneonta and Chemung formations in eastern-central New York.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 203–209.

Abstract: Am. Nat., vol. xxvii, p. 558 (½ p.).

Describes the geographic distribution of the two formations in this region and the relations of the beds, illustrated by cross section and columnar sections. Describes their lithologic characters and discusses the use of the term "Catskill."

222 —— The Magothy formation of northeastern Maryland.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 407–419.

Describes the general relations of the Costal Plain formations, including a geologic map of the Magothy and associated formations in northeastern Maryland and a discussion of the distribution and lithologic character of the Magothy strata in this region.

223 —— On fossils in the Lafayette formation in Virginia.

Am. Geol., vol. ix, pp. 181–183.

The fossils were found at the base of the formation and are so poorly preserved as to be difficult of identification, and, on account of their water-worn condition, it is possible they may have been derived from the underlying Chesapeake beds.

224 —— Record of North American geology for 1891.

U. S. Geol. Surv., Bull. No. 99, pp. 6–73.

Gives a list of papers on North American geology, with notes descriptive of contents and index references.

225 —— Notes on the stratigraphy of a portion of central Appalachian Virginia.

Am. Geol., vol. x, pp. 10–18.

Refers to the nomenclature of the formations in this region used by other writers. Describes the Silurian, Devonian and Carboniferous strata and compares them with strata of the same age in New York and Pennsylvania.

226 —— On two overthrusts in eastern New York.

Geol. Soc. Am., Bull., vol. iv, pp. 436–439.

Describes two overthrusts of Silurian rocks in the Shawangunk Mountain, illustrated by three cross sections.

227 **Davidson** (Walter B. M.). Florida phosphates: Origin of the bowlder phosphates of the Withlacoochee River district.

Eng. and Min. Jour., vol. liii, p. 42 (correspondence).

Reviews the paper by N. A. Pratt on the same subject.

228 —— The present formation of phosphatic concretions in deep-sea deposits.

Eng. and Min. Jour., vol. liii, pp. 499–500.

Gives the results of the *Challenger* expedition in this connection and quotes from the published report.

229 —— Notes on the geological occurrence of phosphate of lime in the United States and Canada.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 139–157.

Describes the occurrence of apatite in gneiss in Canada and the phosphate deposits of South Carolina and Florida, and discusses their geologic occurrence and origin.

230 **Davis** (William Morris). The Catskill delta in the Post-Glacial Hudson estuary.

Boston Soc. Nat. Hist., Proc., vol. xxv, pp. 318-335.

Abstract: Jour. of Geol., vol. i, pp. 97-98.

Gives a sketch of the history of the Hudson River valley and describes the glacial deposits of the region.

231 —— Supplementary note: On the drainage of the Pennsylvania Appalachians.

Boston Soc. Nat. Hist., Proc., vol. xxv, pp. 418-420.

Refers to a previous postulate of the author employed in his discussion of the rivers and valleys of Pennsylvania.

232 —— The subglacial origin of certain eskers.

Boston Soc. Nat. Hist., Proc., vol. xxv, pp. 477-499.

Abstract: Jour. of Geol., vol. i, pp. 95-96.

Discusses the relation of climate to the results of erosion processes and the origin and deposition of certain eskers in Massachusetts. Concludes that they were formed during the closing stage of the last glacial epoch, and that their present form and structure indicate their sub-glacial origin.

233 —— The Loup rivers in Nebraska.

Science, vol. xix, pp. 107-108 and 220-221 (correspondence).

Comments on an article on the same subject by L. E. Hicks.

234 —— The Osage River and the Ozark uplift.

Science, vol. xxii, pp. 276-279 (correspondence).

Reviews a previous article on the subject by Arthur Winslow and discusses the evidence bearing on the question.

235 —— The lost volcanoes of Connecticut.

Pop. Sci. Mo., vol. xl, pp. 221-235.

Describes the occurrence of lava ash beds in Connecticut, and discusses the evidences indicating the location of the volcano from which they were derived.

236 **Dawson** (George M.). Notes on the geology of Middleton Island, Alaska.

Geol. Soc. Am., Bull., vol. iv, pp. 427-431.

Describes some specimens of bowlder clay and other material collected on this island, including a few fossil shells, and concludes that the material is of Pleistocene age and referable to the Glacial period.

237 —— Note on the distribution of the upturned Cretaceous beds of British America.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 433-435 (correspondence).

Describes the divisions of the Cordilleran belt in British America, with a brief reference to the distribution and structure of the Cretaceous strata.

238 **Dawson** (J. William). On the correlation of early Cretaceous floras in Canada and the United States, and on some new plants of this period.

Can. Roy. Soc., Trans., vol. x, sect. iv, pp. 79-93.

Abstract: Am. Jour. Sci., 3d ser., vol. xlv, p. 439 (½ p.).

Gives a summary of geologic knowledge concerning rocks of Cretaceous age. Describes some species of the Kootenai formation and states that they represent Lower Cretaceous facies, an indication that the Kootenai belongs to the lowest portion of the Cretaceous.

239 **Dawson** (J. William). On new species of Cretaceous plants from Vancouver Island.

Can. Roy. Soc., Proc. and Trans., vol. xi, sect. iv, pp. 53–73, pls. v–xiv.

Contains a statement concerning the locality where the collections were made and a description of the plant remains found.

240 —— Geological notes.

Can. Rec. Sci., vol. v, pp. 386–393.

Reviews the recent literature bearing on the classification of the oldest rocks and some recent papers on glacial phenomena. Mentions the discovery of fish remains in the Siluro-Cambrian of Colorado.

241 —— Note on fossil sponges from the Quebec group (Lower Cambro-Silurian) at Little Metis, Canada.

Abstract: Geol. Soc. Am., Bull., vol. iv, pp. 409–410.

242 —— and **Penhallow** (D. P.). Parka decipiens.

Can. Roy. Soc., Trans., vol. ix, sect. iv, pp. 3–16.

Abstract: Am. Geol., vol. ix, p. 341.

Gives a historical and geologic sketch of the fossil and the microscopical and botanical results of a study of the specimens.

243 **Daubrée** (M.). Recherches expérimentales sur le rôle possible des gaz à hautes températures, doués de très fortes pressions et animés d'un mouvement fort rapide, dans divers phénomènes géologiques.

Soc. Géol. de France, Bull., 3d ser., vol. xix, pp. 313–354.

In referring to the relative altitude of volcanoes and their distribution, reference is made to those occurring in western North America.

243*a* **Dean** (George W.). Catalogue of the shell-bearing mollusca of Portage County, Ohio.

Am. Nat., vol. xxvi, pp. 11–23.

244 **Deby** (J.). The fossil Aulisci of California.

Torr. Bot. Club, Bull., vol. xx, pp, 118–119.

Gives a list of 30 forms from California.

244*a* **Derby** (Orville A.). On the separation and study of the heavy accessories of rocks.

Roch. Acad. Sci., Proc., vol. i, pp. 198–206.

Abstract: Am. Nat., vol. xxvi, pp. 694–695.

Describes the apparatus used by the author to separate the mineral constituents of rocks, the method of operation and its application to the study of rock-forming minerals.

244*b* —— A study in consanguinity of eruptive rocks.

Jour. of Geol., vol. i, pp. 597–605.

Describes the occurrence and character of some eruptive rocks of Brazil.

245 **Dewar** (R.). The occurrence of gold and silver in galena and iron pyrites.

Can. Inst., Trans., vol. ii, part i, pp. 121–127.

Contains notes on the association of these minerals and on the process of their deposition.

245*a* **Diest** (P. H. van). On the artesian wells of Denver.

Colo. Sci. Soc., Proc., vol. iv, pp. 1-6.

Gives a brief summary of the history of the Denver artesian basin, and discusses the evidences which indicate the character and extent of the collecting area, the oscillations of the water level, and the average available supply of artesian water in this basin. Considers that at about 1,500 feet in depth a supply of water can be obtained from the basal sandstones of the Laramie.

245*b* —— Evidence bearing on the formation of ore deposits by lateral secretion.

Colo. Sci. Soc., Proc., vol. iv, pp. 340-347.

Describes the geology and discusses the origin of the veins and ore deposits of the John Jay Mine, Boulder County, Colorado.

246 **Diller** (Joseph Silas). On a late volcanic eruption in northern California and its peculiar lava.

U. S. Geol. Surv., Bull. No. 79.

Abstract: Am. Geol., vol. ix, pp. 265-266 (¾ p.).

Noticed in Record for 1891.

247 —— Mica-peridotite from Kentucky.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 286-289.

Abstract: Am. Nat., vol. xxvii, p. 273 (⅓ p.).

Describes the dike in which the specimen occurs and the mineralogic characteristics of the rock.

248 —— The Tertiary revolution in the topography of the Pacific Coast.

Abstract: Am. Jour. Sci., 3d ser., vol. xlvi, p. 74 (⅛ p.).

Paper read before the Geological Society of Washington.

249 —— Note upon some observations on the auriferous gravels of lacustral origin in the region of Taylorsville, Cal.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 398-399 (correspondence).

Describes the general distribution of the gravels of the region and refers to the existence of a fault, indicating the displacement of the auriferous gravel since its deposition.

250 —— Lassen Peak sheet.

U. S. Geol. Surv., Geol. map of the U. S., preliminary edition, 1892.

Describes the topography of the area, the character of the metamorphic rocks, the unaltered sedimentaries and igneous rocks. Gives general sketch of the geologic history of the region and its economic resources. Accompanied by topographic, areal, and economic geologic maps and a sheet illustrating the Cinder Cone.

251 —— Geology of the Taylorsville region of California.

Geol. Soc. Am., Bull., vol. iii, pp. 369-394.

Abstracts: Am. Jour. Sci., 3d ser., vol. xliv, p. 330 (⅓ p.); Am. Geol., vol. x, p. 183 (⅓ p.).

Reviews the previous work in this region and gives a table summarizing the geologic systems represented and their thicknesses. Describes the eruptive action which continued at intervals from the Paleozoic to Pleistocene time, the anticlinal and synclinal structure developed, and the character and displacement of the Taylorsville fault

252 **Diller** (Joseph Silas). Cretaceous and early Tertiary of northern California and Oregon.

Geol. Soc. Am., Bull., vol. iv, pp. 205–224.

Abstract: Am. Geol., vol. xii, pp. 119–120 (½ p.).

Discusses the relation, distribution, and composition of the Shasta-Chico series and gives list of fossils found in the different subdivisions of the series. Reviews the evidences of the pre-Cretaceous elevation of the Klamath Mountains and the Sierra Nevada, and the inter-Cretaceous-Tertiary upheaval of the former.

252*a* **D'Invilliers** (E. V.), **McCreath** (A. S.) and. The Clinch Valley coal fields.

See McCreath (A. S.) and D'Invilliers (E. V.), 611.

253 **Dodge** (William W.) and **Beecher** (Charles E.). On the occurrence of Upper Silurian strata near Penobscot Bay, Maine.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 412–418, with map.

Describes the formations in this region and gives a list of Clinton and Niagara fossils, with their location.

254 **Donald** (J. F.). The occurrence of platinum in Canada.

Eng. and Min. Jour., vol. lv, pp. 81–82.

Remarks on the occurrence of platinum in eastern Canada and in British Columbia.

255 **Douglas** (James). The copper resources of the United States.

Sci. Amer. Suppl., vol. xxxv, pp. 14183–14186.

Describes the copper mines of the Lake Superior, Arizona, Montana, and other districts in the United States.

256 **Drake** (N. F.). Stratigraphy of the Triassic formation of northwest Texas.

Texas Geol. Surv., 3d Ann. Rept., pp. 228-247.

Includes a description of the lithologic and stratigraphic relations of the beds comprising the formation in this region.

257 —— Report on the Colorado coal field of Texas.

Texas Geol. Surv., 4th Ann. Rept., pp. 357–446.

Describes the structural and lithologic characters of the subdivisions of the Cretaceous and Carboniferous formations of the district, the character and extent of the coal seams and the occurrence of iron ore, clay, and building stones. Illustrated by sections and two maps showing the areal geology and extent of the coal field.

258 **Drummond** (A. T.). The physical features of the environs of Kingston, Ontario, and their history.

Can. Rec. Sci., vol. v, pp. 108–117.

Describes the relations of the Laurentian and Cambrian rocks and the Quaternary beds of this locality.

259 **Dryer** (Charles R.) Report upon the geology of Dekalb County, Indiana.

Ind. Dept. Geol. and Nat. Hist., 16th Rept. 1888, pp. 98–104.

Describes the topographic features and drift deposits of this county.

260 **Dryer** (Charles R.). Report upon the geology of Allen County, Indiana.

Ind. Dept. Geol. and Nat. Hist., 16th Rept., 1888, pp. 105-130.

Divides the county into six districts and describes the glacial features of each. Gives a section exhibited by an artesian well boring, showing the presence of Silurian limestones and shales underneath the drift-covering.

261 —— Report upon the geology of Steuben County, Indiana.

Ind. Dept. Geol. and Nat. Hist., 17th Rept., 1891, pp. 114-134.

Describes the glacial moraines and drainage system of the county.

262 —— Report upon the geology of Whitley County, Indiana.

Ind. Dept. Geol. and Nat. Hist., 17th Rept., 1891, pp. 160-170.

Describes the glacial moraine covering this region and the drainage systems.

263 **Dumble** (Edwin T.). Note on the occurrence of grahamite in Texas.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 601-605.

Abstract: Am. Geol., vol. xi, p. 120 (8 l.).

Describes the geology of the region in which the specimens were found and gives the section of the two bluffs, made up of Tertiary strata, in which they occur and chemical analyses.

264 —— Sources of the Texas drift.

Texas Acad. Sci., Trans., vol. i, pp. 11-13.

Abstract: Am. Nat., vol. xxvii, pp. 269-270 (½ p.).

Describes the lithologic character of the drift of the Rio Grande and Colorado River basins and of eastern Texas, and gives the author's conclusions as to the source of the material.

265 —— Volcanic dust in Texas.

Texas Acad. Sci., Trans., vol. i, pp. 33-34.

Describes briefly the geology of the region and the section in which the volcanic dust occurs.

266 —— Notes on the geology of the valley of the middle Rio Grande.

Geol. Soc. Am., Bull., vol. iii, pp. 219-230.

Abstract: Am. Geol., vol. x, pp. 65-66 (½ p.).

Describes the general topographic and geologic features of the region. The formations represented comprise the Neocene, Eocene, and Cretaceous.

267 —— Second report of progress.

Texas Geol. Surv., 2d Rept. of Prog., 1891, pp. 7-91.

Gives an account of the work done on the general and economic geology of the Carboniferous, Cretaceous, and Tertiary sections of the State and includes reports of the several assistant geologists.

268 —— [Report of State Geologist.]

Texas Geol. Surv., 3d Ann. Rept., 1891, pp. xvii-lxi.

Gives a summary of the geologic work done during the year and the reports of the assistant geologists.

269 —— Progress of geological surveys in Texas.

Eng. and Min. Jour., vol. lv, p. 55.

Remarks on the work and results obtained by the Geological Survey of Texas in 1892.

270 **Dumble** (Edwin T.). Report of the State Geologist for 1892.
Texas Geol. Surv., 4th Ann. Rept., pp. xvii–xxxv.
Includes an account of the work done in 1892, with remarks on the deposits of the Coastal slope and the Colorado coal field, and on the deposits of the precious metals associated with copper and lead in the Trans-Pecos district.

271 —— Report on the brown coal and lignite of Texas.
Texas Geol. Surv., 1892, pp. 17–243.
Abstracts: Am. Geol., vol. xi, p. 209; Am. Nat., vol. xxvii, p. 379 (½ p.).
Describes the origin, formation, and characters of brown coal, the geology of the Texas deposits, and the occurrence and composition of the Tertiary brown coals in the different States, and compares them with European and bituminous coals.

272 —— and **Cummins** (W. F.). The Double Mountain section.
Am. Geol., vol. ix, pp. 347–351.
Describes the general features of the region and the character of the Cretaceous, Triassic, and Permian beds which make up the mountain mass and mentions the fossils found in them.

273 —— The Kent section and Gryphæa tucumcarii Marcou.
Am. Geol., vol. xii, pp. 309–314.
Gives the section occurring at this locality in western Texas and a list of fossils found, representing three divisions of the Cretaceous.

274 —— and **Harris** (G. D.). The Galveston deep well.
Am. Jour. Sci., 3d ser., vol. xlv, pp. 38–42.
Gives the section shown by this well to a depth of 3,070 feet and a summary of conclusions drawn from a study of the fossils obtained from the well.

275 **Dunn** (R. L.). Siskiyou County [California].
Cal. State Min. Bur., 11th Rept., pp. 420–449.
Describes the geologic structure of the Coast Range, with notes on some of the mines of the county.

276 —— Trinity County [California].
Cal. State Min. Bur., 11th Rept., pp. 480–484.
Brief general description of the placer deposits.

277 **Dutton** (C. E.). On the greater problems of physical geography.
Abstract: Am. Jour. Sci., 3d ser., vol. xliv, p. 258 (½ p.).

277*a* **Dwight** (A. S.). Notes on Montana sapphires.
Colo. Sci. Soc., Proc., vol. iv, pp. 174–175.
Describes the occurrence of sapphires in the bars of placer gravel and considers that they originally came from a dike.

278 **Dyche** (D. T. D.). The crinoid Heterocrinus subcrassus.
Science, vol. xx, p. 66.
Describes its structural characteristics.

E.

279 **Eakins** (L. G.). A new meteorite from Hamblen County, Tenn.
Am. Jour. Sci., 3d ser., vol. xlvi, pp. 283–285.
Gives the chemical composition of the metallic and siliceous portions of the meteoric mass.

279a **Eakins** (L. G.), **Cross** (W.) and. A new occurrence of ptilolite.
See Cross (W.) and Eakins (L. G.), 198.

280 **Eakle** (Arthur S.). On some dikes occurring near Lyon Mountain, Clinton County, N. Y.
Am. Geol., vol. xii, pp. 31-36.
Describes the location of the dikes, shown on an accompanying map of the region, and the petrographic characters and chemical composition of the dike rocks.

281 **Earle** (Charles). Revision of the species of Coryphodon.
Am. Mus. Nat. Hist., Bull., vol. iv, pp. 149-166.
Abstract: Am. Jour. Sci., 3d ser., vol. xlv, p. 160 (¼ p.).
Compares the Coryphodon material recently procured from the Wasatch formation in Wyoming with that contained in other collections.

282 —— A memoir upon the genus Palæosyops Leidy and its allies.
Phila. Acad. Nat. Sci. Jour., 2d ser., vol. ix, pp. 267-388, pls. x-xvii.
Describes the geologic succession, distribution, and characters of the different species.

283 —— **Wortman** (J. L.) and. Ancestors of the tapir from the lower Miocene of Dakota.
Am. Mus. Nat. Hist., Bull., vol. v, pp. 159-180.
Discusses the origin of the tapir in America, describes species from the Miocene of South Dakota, and reviews the evidences of relationship between American and European species of Protapirus.

284 **Edwards** (Arthur M.). Hudson River "Fiord."
Am. Jour. Sci., 3d ser., vol. xliii, pp. 182-183.
Gives a list of fossils found in the soundings from the Hudson River "Fiord," and concludes that, as the microscopic organisms are not those of Newark Bay, the "fiord" is not a continuation of that bay, but of the Hudson River.

285 —— On a Champlain (?) deposit of Diatomaceæ belonging to the littoral plain.
Am. Jour. Sci., 3d ser., vol. xlv, pp. 385-388.
Gives a list of species collected in New Jersey and describes the glacial geology of the region.

286 —— The Diatomaceæ of the Triassic (?) sandstone of New Jersey.
Am. Nat., vol. xxvii, pp. 817-818.
Remarks on finding Diatomaceæ in Tertiary clays of New Jersey.

287 **Eldridge** (George H.). The Florence oil field, Colorado.
Am. Inst. Min. Engrs., Trans., vol. xx, pp. 442-462.
Gives a history of the development of the petroleum industry in this region, and describes the topographic and geologic features and structure. Describes the oil-bearing horizon, its thickness and extent, and the source of the oil. Discusses the relation between wells, their yield, and describes the character and treatment of the products. Discussed by F. H. Newell, p. 462.

288 **Eldridge** (George H.). A preliminary sketch of the phosphates of Florida.

Am. Inst., Min. Engrs., Trans., vol. xxi, pp. 196-231.

Describes the topographic and geologic features of the State, the character and occurrence of the four classes of Florida phosphates, and discusses their origin. Gives chemical analyses of a number of phosphate specimens. Presents a map showing the location and extent of the phosphate districts.

289 **Ells** (R. W.). The Laurentian of the Ottawa district.

Geol. Soc. Am., Bull., vol. iv, pp. 349-360.

Abstract: Am. Nat., vol. xxvii, p. 996 (½ p.).

Reviews the literature on the geology of this region and the work of Sir W. Logan on the Laurentian. Gives data obtained in an examination of the Trembling Mountain section and the region between the anorthosite area and Gatineau River. Describes the Laurentian gneiss and limestone and associated intrusive rocks, and presents a résumé of the facts and the author's conclusions.

290 —— The geology of the proposed tunnel under the Northumberland strait.

Can. Roy. Soc., Proc. and Trans., vol. xi, sect. iv, pp. 75-84, with map.

Describes the geology of the region and gives the records of ten bore holes made along the line of the proposed tunnel.

291 **Elrod** (Moses N.) and **Benedict** (A. C.). Geology of Wabash County.

Ind. Dept. Geol. and Nat. Hist., 17th Rept., 1891, pp. 192-272.

Describes the topographic features and gives a list of fossils found in this county. Gives the section shown at various localities and the lithologic character of the Niagara limestones, and discusses the probability of a tilting of these beds. Describes the Quaternary deposits and gives sections displayed by several gas wells.

292 **Emerson** (B. K.). Proofs that the Holyoke and Deerfield trap sheets are contemporaneous flows and not later intrusions.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 146-148.

Gives an abstract of the data showing that the main trap sheets of Massachusetts are contemporaneous and easily distinguished from smaller intrusive masses.

293 —— Notes upon two bowlders of a very basic eruptive rock from the west shore of Canandaigua Lake and their contact phenomena upon the Trenton limestone.

N. Y. State Mus., 46th Ann. Rept., pp. 251-255.

Describes the petrographic characters of the specimens and the contact phenomena.

294 —— Hawley sheet.

U. S. Geol. Surv., Geol. atlas of the U. S., preliminary edition, 1892.

Describes the topographic features of the region, the lithologic character, structure and relations of the Cambrian and Silurian formations. Illustrated by topographic, colored areal and economic geologic and structure section maps.

295 **Emerson** (B. K.). Outlines of the geology of the Green Mountain region in Massachusetts.

U. S. Geol. Surv., Geol. atlas of the U. S., Hawley sheet, preliminary edition, 1892.

Describes the topographic features of the region and the lithologic character, structure and relations of the Algonkian, Cambrian, Silurian, and Devonian formations.

296 **Emmens** (Stephen H.). The nickel deposits of North Carolina.

Eng. and Min. Jour., vol. liii, pp. 476–477.

Quotes from the previous descriptions of these deposits, compares them with the New Caledonia deposits, and describes the character and extent of the ore bodies.

297 —— Faulting in veins.

Eng. and Min. Jour., vol. liii, p. 492, and vol. liv, p. 27 (correspondence).

Reviews statements of John A. Church on this subject.

298 **Emmons** (Samuel Franklin). Progress of the precious-metal industry in the United States since 1880.

U. S. Geol. Surv., Min. Res., 1892, pp. 46–94.

Gives a general review of the progress of the industry and a brief description of the principal ore deposits in the various States and Territories, tables of production, and a forecast of future production.

299 —— Fluorspar deposits of southern Illinios.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 31–53.

Gives a historical sketch of mining operations in this region. Describes the lithologic character of the strata and discusses the evidences which indicate the geologic subdivisions to which they should be assigned. Gives an account of the distribution of lead and associated minerals in limestones of the Mississippi Valley. Describes the mining developments of the district and discusses the manner of formation of the deposits and the origin of the vein material.

300 —— Faulting in veins.

Eng. and Min. Jour., vol. liii, pp. 548–549.

Refers to previous communications on this subject and discusses the occurrence and characters of fracture planes and the conditions of their development and the general features of fault phenomena.

301 **Eyerman** (John). Bibliography of North American vertebrate paleontology for the year 1891.

Am. Geol., vol. ix, pp. 249–256.

Presents a bibliography and a list of new forms described in the papers mentioned.

302 —— Bibliography of North American vertebrate paleontology for the year 1892.

Am. Geol., vol. xi, pp. 388–393.

Contains a list of papers bearing on North American vertebrate paleontology for the year 1892.

F.

302*a* **Faber** (Charles), **Miller** (S. A.) and. Description of some sub-Carboniferous and Carboniferous Cephalopoda.

See Miller (S. A.) and Faber (C.), 671.

303 **Faber** (Charles), **Miller** (S. A.) and. Some new species and new structural parts of fossils.

Cinn. Soc. Nat. Hist. Jour., vol. xv, pp. 79-87.

304 **Fairbanks** (Harold W.). Geology and mineralogy of Shasta County [California].

Cal. State Min. Bur., 11th Rept., pp. 24-53.

Describes the lithologic character and distribution of the Cretaceous and metamorphic rocks in this county, with notes on the occurrence of coal seams and of the precious metals. Accompanied by colored geologic map.

305 —— Notes on the geology and mineralogy of portions of Tehama, Colusa, Lake, and Napa counties [California].

Cal. State Min. Bur., 11th Rept., pp. 54-75.

Describes the Cretaceous and crystalline rocks of these counties, with notes on some of their mineral deposits.

306 —— Geology of San Diego County; also of portions of Orange and San Bernardino counties [California].

Cal. State Min. Bur., 11th Rept., pp. 76-120.

Contains description of the crystalline, Cretaceous, Tertiary, and Quaternary rocks in these counties, with notes on some mineral deposits, and accompanied by a colored geologic map.

307 —— The relation between ore deposits and their inclosing walls.

Eng. and Min. Jour., vol. lv, p. 200.

Describes the Mother Lode of California, and discusses the question whether certain wall rocks indicate rich mines and whether the metals are derived from such walls or from deep-seated regions. Concludes that mineral deposits usually occur in regions of great disturbance, producing chemical action and access upward of mineral bearing solutions through existing fissure systems.

308 —— The validity of the so-called Wallala beds as a division of the California Cretaceous.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 473-478.

Reviews the evidences upon which the Wallala beds are separated from the Chico and Shasta series. Gives the results of observations in Lower California, and in southern California and concludes that the evidence does not warrant the separation of the Shasta beds from the Chico.

309 —— The pre-Cretaceous age of the metamorphic rocks of the California Coast ranges.

Am. Geol., vol. ix, pp. 153-166.

Quotes the opinions of other writers on the age of these rocks. Describes the structural conditions and fossil contents of the strata in this region, and concludes that the Coast ranges and Sierras were upheaved and metamorphosed prior to the Cretaceous, and, therefore, the gold-bearing slates are pre-Cretaceous.

310 **Fairbanks** (Harold W.). Notes on a further study of the pre-Cretaceous rocks of the California Coast ranges.

Am. Geol., vol. xi, pp. 69-84, with map.

Describes the general character and structure of the formations represented in the Coast ranges from the author's recent observations. Refers to the finding of Inoceramus in the San Francisco sandstones and Aucella in the metamorphic rocks and its bearing on the Cretaceous age of the beds. Concludes that the axes of the Coast ranges and Sierras are structurally closely related and were first raised during the Post-Jurassic upheaval.

311 —— Notes on the occurrence of rubellite and lepidolite in southern California.

Science, vol. xxi, pp. 35-36.

Abstract: Am. Nat., vol. xxvii, p. 1091, 5 l.

Gives a brief account of the geology of the locality in which this mineral association occurs and a description of their mineralogic characters.

312 **Fairchild** (H. L.). A section of the strata at Rochester. N. Y., as shown by a deep boring.

Roch. Acad. Sci., Proc., vol. i, pp. 182-186.

Abstract: Am. Nat., vol. xxvi, pp. 695-696.

Gives a table showing the correspondence of the exposed strata and the first part of the well record, followed by a condensed section of the well boring. Compares the published and measured records of rocks in this vicinity with those of the well record.

313 **Farish** (John B.). The ore deposits of Newman Hill [Rico, Colo.].

Colo. Sci. Soc., Proc., vol. iv, pp. 151-164.

Min. and Sci. Review, vol. xxviii, No. 26, p. 4, vol. xxix, No. 1, pp. 4-5 and No. 2, pp. 4-5.

Describes the geologic features of the locality and the structural and mineralogic characteristics of the ore bodies.

314 **Farnsworth** (P. J.). The Great Lake basins.

Science, vol. xx, p. 74.

Discusses the evidences as to the origin of these lake basins.

315 **Fechet** (Eugene O.). The mines of Sierra Mojada, Mexico.

Eng. and Min. Jour., vol. lv, pp. 151-152.

Describes the general topographic and geologic features of the region. The ore bodies occur in a Cretaceous limestone and their mineral contents are principally silver, lead, and copper.

316 **Felix** (J.) and **Lenke** (H.). Beitrage zur geologie und paleontologie der Republik Mexico.

Part i, Leipzig, 1890; part iii, Stuttgart, 1891.

Abstract: Am. Geol., vol. x, pp. 120-121.

317 —— Ueber die tektonischen Verhältnisse der Republik Mexico.

Zeit. Deut. geol. Gesell., Band xliv, Heft 2, 1892, pp. 303-323.

Describes the topographic and geologic structure of the mountain ranges and plateau of Mexico. Considers that the volcanoes owe their origin to and are arranged along certain definite fissure systems.

318 **Fenner** (Clarence). The Old Telegraph Mine, Bingham Canyon, Utah.

School of Min. Quart., vol. xiv, pp. 354-358.

Describes the character and structure of the ore bodies in this mine.

319 **Ferrier** (W. F.). Notes on the microscopical character of some of the rocks of the counties of Quebec and Montmorency.

Can. Geol. Surv., Reports, vol. v, new ser., part i, 1890-91, Report L, appendix, pp. 73-82.

Quotes Dr. Adams's scheme for the classification of the rocks of the gabbro family and describes the megascopic and microscopic characters of hornblende-granite-gneiss, mica-diorite-gneiss, anorthosite, norite, gabbro-gneiss, and pyroxenite-granite-gneiss.

320 **Fisher** (Osmond). Rigidity not to be relied upon in estimating the earth's age.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 464-468.

Reviews the paper by Clarence King, "The age of the earth," and quotes from other writers concerning the tidal rigidity of the earth. Concludes that rigidity can not be relied upon as furnishing data from which to estimate the earth's age.

321 **Fletcher** (Hugh). Report on the geological surveys and explorations in the counties of Pictou and Colchester, Nova Scotia.

Can. Geol. Surv., Reports, vol. v, new ser., part ii, 1890-91, Report P, p. 193.

The formations of the region range from the post-Tertiary to the Cambro-Silurian and are cut by dikes and sheets of igneous rocks. Describes sections shown at various points, the deposits of coal and iron, and the traces of lead and copper that were found.

322 **Foerste** (Aug. F.). Studies on the Chipola Miocene of Bainbridge, Ga., and of Alum Bluff, Fla., with an attempt at correlation of certain Grand Gulf group beds with marine Miocene beds eastward.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 244-254.

Describes the general character and relations of the strata in this region, with special reference to exposures at Bainbridge and Alum Bluff. Presents a provisional list of Gasteropoda Gully species, showing their geologic and geographic distribution, with notes on the various species.

323 —— New fossil localities in the early Paleozoics of Pennsylvania, New Jersey, and Vermont, with remarks on the close similarity of the lithologic features of these Paleozoics.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 435-444.

Describes the general relations and lithologic character of the Cambrian and Silurian strata in the portions of the States mentioned and their fauna, as shown by the observations of various investigators. Discusses the correlation of the beds in the several districts, and presents a geologic sketch map of the portions of New Jersey and Vermont.

324 **Foerste** (Aug. F.). An examination of Glyptodendron Claypole, and of other so-called Silurian land plants from Ohio.

Am. Geol., vol. xii, pp. 133-141.

Discusses the characteristics of the specimens found in rocks of Clinton age in Ohio, said to be land plants. Considers that at present there is no evidence of the existence of land plants in the region of the Cincinnati anticlinal during Clinton time.

325 —— Remarks on specific characters in Orthoceras.

Am. Geol., vol. xii, pp. 232-236.

Describes some of the special characteristics of Orthoceras.

326 —— The reproduction of arms in crinoids.

Am. Geol., vol. xii, pp. 270-271, (½ p.) (correspondence).

327 **Fontaine** (William M.). Description of some fossil plants from the Great Falls coal field of Montana.

U. S. Nat. Mus., Proc., vol. xv, pp. 487-495, pls. lxxxii-lxxxiv.

Describes the general character of the flora represented and the characteristics of several new species.

328 —— Notes on some fossil plants from the Trinity division of the Comanche series of Texas.

U. S. Nat. Mus., Proc., vol. xvi, pp. 261-282, pls. xxxvi-xliii.

Abstract: Am. Geol., vol. xii, pp. 327-328.

329 **Foote** (A. E.). A new locality for meteoric iron, with a preliminary notice of the discovery of diamonds in the iron.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 279-283.

Describes the locality in Arizona and the specimens obtained, and remarks on the occurrence of small black diamonds in them.

330 —— Preliminary notice of a meteoric stone seen to fall at Bath, South Dakota.

Am. Jour. Sci., 3d ser., vol. xlv, p. 64.

Gives a brief description of the stone, illustrated by photograph, pl. iii.

331 **Forrester** (Robert). Coal fields of Utah.

U. S. Geol. Surv., Min. Res., 1892, pp, 511-520.

The Coal Measures of the Laramie group are best developed on the eastern slopes of the Wasatch and the beds attain a maximum thickness of 28 feet. Coal also occurs in the Montana and Colorado Cretaceous. Gives analyses of coal from different localities.

332 **Forstall** (A. E.). The origin of coal and petroleum.

Sci. Amer. Suppl., vol. xxxiv, pp. 13796-13797.

Gives an account of the conditions existing during the formation of coal and petroleum and reviews the literature on the question of their origin.

333 **Freeland** (Francis T.). Fault rules.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 491-502.

Discusses the general characteristics of fault phenomena and gives a number of rules to be followed in mining where faults occur and a bibliography of the subject.

334 **Fuller** (Homer T.). Effects of droughts and winds on alluvial deposits in New England.

Geol. Soc. Am., Bull., vol. iii., pp. 148–149.

Describes terraces once covered with vegetation, but which are now almost entirely denuded, and states that the wind striking them at an angle carries the sand to the nearest lower spot to the leeward.

G.

335 **Gannett** (Henry). The mapping of the United States.

Scottish Mag., vol. viii, pp. 150–153.

Gives a history of the various surveying expeditions that have been made in the United States and a brief account of the character of the topographic maps now being executed by the U. S. Geological Survey.

336 **Garside** (G. W.). The mineral resources of southeast Alaska.

Min. and Sci. Review, vol. xxx, No. 7, pp. 4–5, and No. 8, pp. 4–5; Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 815–823.

Abstract: Eng. and Min. Jour., vol. lv, pp. 175–176.

Describes the character and value of the precious metal ores found in the several districts of this region, accompanied by sketch map of a part of Alaska, showing mineral belt.

337 **Gaudry** (M. Albert). Excursion dans les Montagnes rocheuses.

Soc. Géol. de France, Bull., 3d ser., vol. xix, No. 12, pp. 936–942.

Gives a general geologic description of the route traversed by an excursion composed of members of the Fifth International Congress of Geologists, crossing many of the Eastern, Middle, and Western States of the United States, and includes a description of the mammalian and other fossil faunas found in some of the Western States.

338 —— Similitudes dans la marche de l'évolution sur l'ancien et le nouveau continent.

Soc. Géol de France, Bull., 3d ser., vol. xix, No. 12, pp. 1024–1035.

Compares the characteristics of certain American faunas with those of Europe, and discusses the changes that have taken place in each and their relation to the progress of evolution.

339 **Geer** (Gerard de). On Pleistocene changes of level in eastern North America.

Am. Geol., vol. xi, pp. 22–44; Boston Soc. Nat. Hist., Proc., vol. xxv, pp. 454–477.

Gives a general statement of the methods and results of the author's investigations in Europe and North America. Considers that continental changes of level are closely connected with the local structure of the earth's crust and that no changes in the level of the sea can account for the phenomena.

340 —— Isobases of the post-Glacial elevation.

Am. Geol., vol. ix, pp. 247–249.

Gives an account of the author's observations of the glacial deposits in various parts of the United States and Canada.

341 —— Quaternary changes of level in Scandinavia.

Geol. Soc. Am., Bull., vol. iii, pp. 65–68, with map.

Describes the author's methods of determining the marine boundary and gives the results of his observations.

342 **Geikie** (James). Glacial geology.

Smith. Inst., Ann. Rept., 1890, pp. 221-230.

Discusses the general conclusions of investigators of glacial phenomena and deposits in different portions of the world.

343 —— Address as president of the Section of Geography.

Brit. Assoc. Adv. Sci., Report 1892, pp. 794-810; Scottish Geog. Mag., vol. viii, pp. 457-479.

Describes the geographic development of coast lines and the orographic movements that have influenced their location and direction in North America and other parts of the earth.

344 **Genth** (Frederick A.). Contributions to mineralogy.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 184-189.

Notes on hübnerite, hessite, bismutite, and natrolite.

345 —— On penfieldite, a new species.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 260-261 (correspondence).

346 —— Contributions to mineralogy, No. 54, with crystallographic notes by S. L. Penfield.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 381-389.

Notes on aguilarite, metacinnabarite, löllingite, rutile, quartz from the alteration of orthoclase, danalite, yttrium-calcium fluoride, cyrtolite, lepidolite, and fuchsite.

347 —— On the "anglesite" associated with boléite, No. 55.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 32-33.

Abstract: Am. Nat., vol. xxvi, p. 1090.

Gives the crystallographic characters of the crystals examined and two chemical analyses.

348 —— The minerals of North Carolina.

U. S. Geol. Surv., Bull. No. 74.

Abstract: Am. Geol., vol. ix, p. 342 (½ p.).

349 **Gibson** (A. M.). Report on the Coal Measures of Blount Mountain, with map and sections.

Ala. Geol. Surv., 1893, pp. 7-80.

Describes the topography and geologic structure of the region and the stratigraphy of the lower and upper Coal Measures, with a detailed description of the coal seams. Discusses the correlation of the various seams and gives chemical analyses of some of the coals.

350 **Gilbert** (Grove Karl). Discussion of the papers "Relationship of the glacial lakes, Warren, Algonquin, Iroquois, and Hudson-Champlain," and the two papers by J. W. Spencer, "The Iroquois shore north of the Adirondacks" and "Channels over divides not evidence per se of glacial lakes."

Geol. Soc. Am., Bull., vol. iii, pp, 492-494.

Reviews the descriptions given in the above-named papers and concludes that the Iroquois lake was bounded on the northeast by a wall of ice and that its surface level was determined by the altitude of a divide near Rome. Concerning the terraces mentioned in the last paper, considers there are certain features which indicate they are not littoral.

351 **Gilbert** (Grove Karl). Continental problems.

Geol. Soc. Am., Bull., vol. iv, pp. 179–190.

Abstracts: Am. Geol., vol. xii, pp. 118–119; Jour. of Geol., vol. i, pp. 204–205.

Differentiates the continental from the oceanic plateaus. Discusses the question of rigidity versus isostasy, the origin of the continental plateaus, the cause of continental movements of elevation and subsidence, and the permanence and growth of continents.

352 —— Post-Glacial anticlinal ridges near Ripley, N. Y., and near Caledonia, N. Y.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 249–250.

An examination of these ridges confirms the opinion previously expressed concerning certain other anticlinal ridges, that the phenomena are superficial. They are due to the sinking of the overlying Corniferous limestone by the removal of salt and gypsum by underground water.

353 **Goldsmith** (E.). Notes on some minerals and rocks.

Phila. Acad. Nat. Sci., Proc., 1893, part i, pp. 174–180.

Describes pimelite, asbeferrite, cacoxenite, amphibolite, phonolite, and granulite from various parts of Pennsylvania.

354 **Gorby** (S. S.). Limits of natural gas supply.

Eng. Mag., vol. v, pp. 419–426.

Discusses the evidences which indicate the organic origin of natural gas.

355 —— Geology of Miami County, Indiana.

Ind. Dept. Geol. and Nat. Hist., 16th Rept., 1888, pp. 165–188.

Describes the topographic features of the county, the character of the drift mantle and the Devonian and Silurian limestones, and gives sections displayed by various gas wells.

356 —— Natural gas and petroleum.

Ind. Dept. Geol. and Nat. Hist., 16th Rept., 1888, pp. 189–301.

In tabular form gives the thicknesses of the Paleozoic formations found in Indiana. Discusses the origin of natural gas, its permanency of supply, and the theories concerning the structural conditions necessary for its accumulation. Includes a description of the structural features of the State and numerous sections as shown by well borings.

357 **Gordon** (C. H.). Quaternary geology of Keokuk, Iowa, with notes on the underlying rock structure.

Am. Geol. vol. ix, pp. 183–190, three sections.

Gives a vertical section of the beds at this locality. Describes the glacial deposits and loess formation in this region.

358 **Graham** (James C.). Some experiments with an artificial geyser.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 54–60.

Describes the apparatus used and refers to McKenzie's theory of a geyser eruption. Gives tables showing the temperature of materials used, time of eruptions, etc., and discusses the results obtained as bearing on the phenomena of soaping geysers.

359 **Grant** (Ulysses Sherman). The stratigraphic position of the Ogishke conglomerate of northeastern Minnesota.

Am. Geol., vol. ix, pp. 4-10.

Describes the composition of the conglomerate and quotes the views of other writers on its age. Describes the relations of the conglomerate to the Saganaga granite and to the Keewatin. Concludes that it is not a parallel of the Animike and that it is a part of but younger than most of the Keewatin.

360 —— Note on an augite soda-granite from Minnesota.

Am. Geol., vol. xi, pp. 383-388.

Describes the petrographic characters and gives the chemical composition of a type of granite from the Precambrian of northeastern Minnesota.

361 —— Note on quartz-bearing gabbro in Maryland.

Johns Hopkins Univ. Circ., vol. xii, pp. 47-49.

Abstracts: Am. Geol., vol. xi, p. 209, (½ p.); Am. Nat., vol. xxvii, p. 383, (½ p.).

Describes the petrographic characters of certain quartz gabbros of Maryland.

362 —— Field observations on certain granitic areas in northeastern Minnesota.

Minn. Geol. and Nat. Hist. Surv., 20th Ann. Rept., pp. 35-110.

Gives field observations in different areas of the region, containing statements as to the general rock structures and a catalogue of specimens collected.

363 **Gregory** (J. W.). The relations of the American and European echinoid faunas.

Geol. Soc. Am., Bull., vol. iii, pp. 101-108.

Describes the characteristics of these faunas on the two continents, from the Carboniferous to and including the Tertiary, and concludes that their succession presents a series of phenomena incompatible with the theory of the permanence of the great ocean basins.

364 **Gresley** (W. S.). A hitherto undescribed phenomenon in hematite.

Am. Geol., vol. ix, pp. 219-223.

Discusses the origin of certain holes in a specimen of hematite.

365 —— Faulting in veins.

Eng. and Min. Jour., vol. liii, p. 517 and p. 660 (correspondence).

Describes an occurrence of coal which shows from the vein material that there has been a movement of the walls inclosing it.

366 —— North American geological notes.

Manchester Geol. Soc., Trans., vol. xxi, part ii, pp. 68-74.

Includes notes on some peculiar formations in the roof of a coal seam in Illinois, the occurrence of fossil trees in Pennsylvania anthracite beds and on some bowlders found in Coal Measures in the North American anthracite region.

367 **Grimsley** (G. Perry). Microscopical study of Ohio limestones.

Cin. Soc. Nat. Hist. Jour., vol. xv, pp. 160-167.

Describes the limestone formations of the State, their microscopic structure and the characters of some of the contained fossils.

368 **Griswold** (Leon S.). The structure of the Ouachita uplift of Arkansas.

Abstract: Am. Assoc. Adv. Sci. Proc., vol. xl, p. 261.

The uplift is formed of closely folded Silurian strata between two broad belts of Lower Carboniferous rocks, and appears to form a continuation of the Appalachian system.

369 —— A basic dike in the Connecticut Triassic.

Harv. Mus. Comp. Zool., Bull., vol. xvi, pp. 239–242.

Gives a brief description of the locality of the dike and the microscopic characters of the dike rock (fourchite ?), and discusses the question as to the class to which it belongs.

370 —— Whetstones and novaculites of Arkansas.

Ark. Geol. Surv., Ann. Rept., 1890, vol. iii, pp. 1–443, pls. i–ix.

Abstracts: Am. Jour. Sci., 3d ser., vol. xliv, p. 332 (¼ p.); Am. Nat., vol. xxvii, p. 42 (⅓ p.).

Gives a general historical sketch of whetstones. Describes the megascopic and microscopic characters of Arkansas novaculites, their chemical composition and the topography and geology of the Arkansas novaculite area. Discusses their origin.

370*a* **Guiterman** (Franklin). [Origin of ore deposits.]

Col. Sci. Soc., Proc., vol. iv, pp. 347–348.

In discussion of paper by P. H. van Diest on the "Evidence bearing on the formation of ore deposits by lateral secretion."

371 **Gulliver** (F. P.). The Newtonville sand plain.

Jour. of Geol., vol. i, pp. 803–812.

Abstract: Am. Geol., vol. xii, p. 177 (¼ p.).

Describes the process of making the clay model of the map of the region, reproduced in fig. 1; and of another clay model of the supposed relations of the deposits, shown in fig. 2. Describes the origin and relations of the glacial beds.

372 **Gurley** (R. W.). The geologic age of the graptolite shales of Arkansas.

Ark. Geol. Surv., Ann. Rept., 1890, vol. iii, pp. 401–404.

Discusses the evidences presented by the fossils found in these shales in their bearing on the geologic age of the formation and their correlation with other beds of similar horizons, viz., the Trenton and Calciferous.

373 —— New species of graptolites.

Ark. Geol. Surv., Ann. Rept., 1890, vol. iii, pp. 416–418.

Brief description of new species from Arkansas.

374 **Gurley** (Wm. F. E.), **Miller** (S. A.) and. Description of some new genera and species of Echinodermata from the Coal Measures and sub-Carboniferous rocks of Indiana, Missouri, and Iowa.

Ind. Dept. Geol. and Nat. Hist., 16th Rept., 1888, pp. 327–373.

Describes new species of Echinodermata from the Carboniferous.

H.

375 **Hague** (Arnold). Geology of the Eureka district, Nevada.

U. S. Geol. Surv., Monograph XX, pls. i-viii, figs. 1-9.

Abstracts: Am. Geol., vol. xii, pp. 264-266; Am. Jour. Sci., 3d ser., vol. xlv, pp. 161-163.

Describes the topographic and geologic features of the region and includes a discussion of the relations of land and water during Paleozoic time. Gives an account of volcanic action in this region and a description of the ore bodies and their mode of formation. Appendix A gives a list of fossils found in each formation and Appendix B is a discussion of the microscopic characters of the crystalline rocks.

376 **Hall** (Charles E.). Geological notes on the manganese ore deposit of Crimora, Va.

Am. Inst. Min. Engrs., Trans., vol. xx, pp. 46-49.

The ore bodies lie in a basin at the base of the mountains formed of Potsdam sandstones, shales, and slates, in the former of which black oxide of manganese is disseminated and from which the ore appears to have been derived by seepage of surface waters.

377 —— The formation and deformation of Minnesota lakes.

Sci. Amer. Suppl., vol. xxxvi, pp. 14625-14626.

Describes the process of formation and deformation of the glacial lakes in Minnesota.

378 —— A review of the theories of the origin of the granitic rocks and the crystalline schists.

Abstract: Minn. Acad. Nat. Sci., Bull., vol. iii, p. 175.

Brief résumé of the theories of the origin of granite and allied rocks.

379 —— A vacation trip into the Black Hills of South Dakota.

Abstract: Minn. Acad. Nat. Sci., Bull., vol. iii, pp. 185-186.

Gives an account of the relations of the formations in this region.

380 —— The deep well at Minneota, Minn.

Minn. Acad. Nat. Sci., Bull., vol. iii, pp. 248-250.

Brief description of the formations penetrated, and gives the section as shown by the well record.

381 —— Notes on a geological excursion into central Wisconsin.

Minn. Acad. Nat. Sci., Bull., vol. iii, pp. 251-268.

Describes the microscopic and megascopic characters of the rock types in the region visited.

382 —— and **Sardeson** (F. W.). Paleozoic formations of southeastern Minnesota.

Geol. Soc. Am., Bull., vol. iii, pp. 331-368.

Abstracts: Am. Nat., vol. xxvii, p. 144; Am. Geol., vol. x, pp. 182-183 (½ p.).

Describes the character of the Archean floor upon which the Upper Cambrian was deposited and the lithologic characters of the Magnesian series. The Lower Silurian is represented by the St. Peters sandstone, Trenton and Cincinnati limestones and shales, and the Devonian by siliceous limestones containing few fossils.

383 **Hall** (James). An introduction to the study of the genera of Paleozoic Brachiopoda, part i. Assisted by J. M. Clarke.

Nat. Hist. of N. Y. Paleontology, vol. viii, part i, pp. 1–367, pls. i–xx.

Describes genera and also some of the species of Brachiopoda.

384 —— An introduction to the study of the genera of Paleozoic Brachiopoda. Assisted by J. M. Clarke.

Nat. Hist. of N. Y. Paleontology, vol. viii, part ii, fascicle i, pp. 1–176.

Continues the review of the genera of Paleozoic Brachiopoda begun in part i.

385 —— An introduction to the study of Brachiopoda.

N. Y. State Mus., 45th Ann. Rept., pp. 455–616.

Abstracts: Am. Geol., vol. x, pp. 251–253; Am. Jour. Sci., 3d ser., vol. xliv, pp. 330–332.

Describes the general characters of the class, their habits of life and powers of locomotion, and includes a description of some of the genera.

386 —— Report of the State Geologist for the year 1891.

N. Y. State Mus., 45th Ann. Rept., pp. 323–345.

Gives a list of Devonian fossils found in the Livonia salt shaft.

387 **Hall** (W. S.). The South Dakota artesian basin.

Science, vol. xxii, pp. 29–30.

Discusses and illustrates by cross section the geology of South Dakota.

388 **Hallock** (William). Preliminary report of observations at the deep well at Wheeling, W. Va.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 234–236.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 257–259.

Gives a list of temperatures at various depths down to 4,500 feet, and a table of comparison with those of two other deep wells.

389 **Halse** (Edward). Notes on the occurrence of manganese ore near Mulegé, Baja California, Mexico.

North of Eng. Inst. of Min. and Mech. Engrs., Trans., vol. xli, pp. 202–307.

Abstract: Eng. and Min. Jour., vol. lv, pp. 223–225.

Describes veins of manganese ore in trachyte and gives chemical analyses of some specimens. The ore occurs as filling of superficial vein-like fissures and was probably derived from the trachyte by leaching.

390 **Harker** (Alfred). Thermometamorphism in igneous rocks.

Geol. Soc. Am., Bull., vol. iii, pp. 16–22.

Refers to the previous publication on this subject and describes the changes in the igneous rocks of the English lake district. Concludes that basic and intermediate lavas, when affected by weathering, are as easily changed by heat as argillaceous sediments; acid lavas and ashes may be very little modified by heat. Various feldspars, resulting from the rejuvenation of old feldspars or by recombinations of other minerals in the advanced stages of metamorphism, are abundant in the newly formed products.

391 **Harker** (Alfred). On the migration of material during the metamorphism of rock masses.

Jour. of Geol., vol. i, pp. 574-578.

Discusses the changes in rock masses which are due to thermal metamorphism. Considers that transference of material due to thermal causes is confined to narrow limits and this limit varies with the temperature.

392 **Harris** (Gilbert Dennison). The Tertiary geology of Calvert Cliffs, Maryland.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 21-31.

Gives the sections exposed by these cliffs at several localities, with a list of species found in each and map of the region.

393 —— Preliminary report on the organic remains obtained from a deep well at Galveston, together with conclusions respecting the age of the various formations penetrated.

Texas Geol. Surv., 4th Ann. Rept., pp. 117-119.

Gives in tabular form the bathymetric distribution of the fossils obtained from the well, from which the conclusions are drawn as to the geologic horizons represented, which are said to range from Pleistocene to Upper Miocene.

394 —— Correlation of Tejon deposits with Eocene stages of the Gulf Slope.

Science, vol. xxii, p. 97 (correspondence).

Remarks on similarity of the fauna found in the Eocene of the Gulf States, Texas, and California.

395 —— Republication of Conrad's fossil shells of the Tertiary formations of North America.

Abstract: Am. Geol., vol. xii, pp. 60-61.

395*a* —— **Dall** (W. H.) and. Correlation Papers. Neocene.

See Dall (W. H.) and Harris (G. D.), 216.

395*b* —— **Dumble** (E. T.) and. The Galveston deep well.

See Dumble (E. T.) and Harris (G. D.), 274.

396 **Harris** (T. W.). Mount Bob, Mount Ida, or Snake Hill.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 236-238.

Describes the formations of this hill in eastern New York as remnants of the Lower Helderberg group.

396*a* **Harrison** (J. B.), **Jukes-Brown** (A. J.) and. The geology of Barbados, part ii. The oceanic deposits.

See Jukes-Brown (A. J.) and Harrison (J. B.), 508.

397 **Hartwell** (E. Adams). The Pearl Hill pothole.

Boston Soc. Nat. Hist., Proc., vol. xxv, pp. 421-425.

Describes the pothole as occurring in a bowlder of mica schist derived from a neighboring exposure of the same rock. Considers that it was formed by some glacial stream flowing down a crevasse.

398 **Hatcher** (J. B.). The Titanotherium beds.

Am. Nat., vol. xxvii, pp. 204-221.

Describes the geographic distribution of these beds, their lithologic composition and stratigraphic position, and discusses the character of the fauna by which they have been divided into lower, middle, and upper beds.

399 **Hatcher** (J. B.). The Ceratops beds of Converse County, Wyo.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 135-144.

Describes the geographic distribution of the Ceratops beds in this region, the lithologic character of the strata, and their stratigraphic position. Discusses the age of the Ceratops beds, as indicated by the fossils, and the probable conditions attending their deposition.

400 **Haworth** (Erasmus). The age and origin of the crystalline rocks of Missouri.

Mo. Geol. Surv., Bull. No. 5.

Review: Am. Geol., vol. ix, pp. 55-56 (⅜ p.).

This paper is principally devoted to giving the evidence of the eruptive origin of the crystalline rocks of Missouri, and adds confirmatory evidence of their assumed Archean or Prepaleozoic age.

401 —— Prismatic sandstone from Missouri.

Science, vol. xix, p. 58; Iowa Acad. Sci., Proc., vol. i, part ii, pp. 36-37.

Describes an occurrence of sandstone of a prismatic form resembling basaltic columns.

402 —— Notes on Missouri minerals.

Iowa Acad. Sci., Proc., vol. i, part ii, pp. 33-35.

Describes occurrences of melanite in a basic dike rock and of limonite pseudomorphs after calcite.

403 **Hay** (Robert). Geology and mineral resources of Kansas.

Kans. State Board of Agric., 8th Biennial Rept., 1891-92, pp. 99-162.

Describes the topographic features and lithologic character and the relations of the Carboniferous, Cretaceous, Tertiary and Post-Tertiary formations in the State, including an account of the lead and zinc, coal, salt, and other mineral deposits.

404 —— Notes on some new species of fossil cephalopods.

Kans. Acad. Sci., Trans., vol. xiii, pp. 37-47.

Description of species occurring in the Carboniferous and Permo-Carboniferous of Kansas.

405 —— Some characteristics of the glaciated area of northeastern Kansas.

Kans. Acad. Sci., Trans., vol. xiii, pp. 104-106.

Describes the glacial deposits and phenomena of this region.

406 —— Sandstone dikes in northwestern Nebraska.

Geol. Soc. Am., Bull., vol. iii, pp. 50-55, figs. 1-5.

Briefly describes the geologic formations of the region and states the width and direction of the two dikes.

407 —— A contribution to the geology of the Great Plains.

Geol. Soc. Am., Bull., vol. iii, pp. 519-521.

Abstract: Am. Geol., vol. xi, pp. 56-57.

The surface of the plains area consists of calcareous and arenaceous clays of Tertiary age which may grade into Post-Pliocene to the east.

408 **Hayes** (C. W.). An expedition through the Yukon district.

Nat. Geog. Mag., vol. iv, pp. 117-159.

Describes the character of the country traversed and its general orographic features. The sedimentaries are limestones, shales, sandstones, quartzites, and conglomerates. The igneous rocks are mainly basic, largely altered to serpentine, and granites. Placer gold is widely disseminated and copper occurs at several localities. Describes the recent volcanic phenomena and the general features of the glaciation of the region.

409 —— Notes on the geology of the Yukon basin.

Abstracts: Geol. Soc. Am., Bull., vol. iii, pp. 495-496; Am. Geol., vol. xi, pp. 58-59 (½ p.).

410 —— Report on the geology of northeastern Alabama and adjacent portions of Georgia and Tennessee.

Ala. Geol. Surv., Bull. No. 4, pp. 11-85, pl. i, map and structure sections, figs. 1-15.

Abstracts: Jour. of Geol., vol. i, pp. 98-99; Am. Nat., vol xxvii, pp. 34-35 (½ p.); Am. Geol., vol. x, pp. 322-323 (½ p.).

Describes the topographic features of the district, its drainage systems, the stratigraphy of the Cambrian, Silurian, Devonian, and Carboniferous strata and their structural relations.

411 —— Chattanooga sheet. (Tennessee.)

U. S. Geol. Surv., Geol. map of the U. S., Preliminary edition, 1892.

Describes the topography of the area, the character and relations of the Cambrian, Silurian, Devonian, and Carboniferous formations, their structure, and the mineral resources. Accompanied by topographic, colored areal and economic and structure section maps and a sheet of columnar sections.

412 —— Kingston sheet. (Tennessee.)

U. S. Geol. Surv., Geol. map of the U. S., Preliminary edition, 1892.

Describes the topography of the area, the character, structure, and relations of the Cambrian, Silurian, Devonian, and Carboniferous rocks, the mineral resources and soils. Accompanied by topographic, colored areal and economic geologic and structure section maps.

413 ——Ringgold sheet. (Tennessee and Georgia.)

U. S. Geol. Surv., Geol. map of the U. S., Preliminary edition, 1892.

Describes the topography of the region, the stratigraphy of the Cambrian, Silurian, Devonian, and Carboniferous rocks, their structure and mineral resources. Accompanied by topographic, colored areal and economic geologic and structure section maps.

414 —— Bauxite.

U. S. Geol. Surv., Min. Res., 1893, pp. 159-167.

Describes the geologic structure of the Cambrian and Silurian formations in which the deposits are found in the Appalachian province and the forms of the ore bodies, and discusses their origin.

414*a* —— **Willis** (B.) and. Conditions of Appalachian faulting.

See Willis (B.) and Hayes (C. W.), entry 1060.

415 **Headden** (William P.). Kehoeite, a new phosphate from Galena, Lawrence County, South Dakota.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 22-25.

Describes the mineralogic characters and chemical composition of a new substance for which the name kehoeite is proposed. Includes a note on jarosite.

416 **Headden** (William P.). Stannite and some of its alteration products from the Black Hills, S. Dak.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 105-110.

Describes the megascopic characters of a specimen found in a mine, containing mica. Gives a description of the alteration products and a chemical analysis of the mineral.

417 **Heilprin** (Angelo). The geology and paleontology of the Cretaceous deposits of Mexico.

Review: Am. Geol., vol. x, p. 121 (½ p.).

Noticed in Record for 1891.

418 **Heinrich** (Carl). Zinc-blende mines and mining near Webb City, Missouri.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 3-25.

Abstract: Eng. and Min. Jour., vol. liii, pp. 594-595.

The ore bodies occur in Subcarboniferous limestones, overlaid by bituminous clay, calcareous slates and shales, and are found at intervals over a considerable area. Describes the character and structure of the ore deposits.

419 **Henderson** (C. Hanford). Mica and mica mines.

Eng. and Min. Jour., vol. lv, p. 4.

Describes briefly the general characteristics and manner of occurrence of mica, with remarks on the mica veins of North Carolina.

420 **Hershey** (Oscar H.). The Utica shale in Stephenson County, Illinois.

Science, vol. xxii, p. 202.

Gives a generalized section of the Cincinnati group of this county, and describes its lithologic characteristics.

421 —— The Pleistocene rock gorges of northwestern Illinois.

Am. Geol., vol. xii, pp. 314-323.

Describes the rock gorges of this region and discusses the cause of their formation. Includes an account of the gorge cutting during the glacial period.

422 **Herzer** (H.). A new fungus from the Coal Measures.

Am. Geol., vol. xi, pp. 365-366.

Describes the fungus found in Zoar limestone, Tuscarawas County, Ohio.

423 —— A new tree from the Carboniferous rocks of Monroe County, Ohio.

Am. Geol., vol. xi, pp. 285-286.

Describes a new genus and species of Endogen.

424 —— A new fungus from the Coal Measures.

Am. Geol., vol. xii, pp. 289-290.

Describes a new fungus from Ohio.

425 **Hicks** (Lewis Ezra). Some elements of land sculpture.

Geol. Soc. Am., Bull., vol. iv, pp. 133-146.

Abstract: Am. Geol., vol. xi, p. 412, 6 l.

Discusses some principles of erosion processes.

426 —— The evolution of the Loup rivers in Nebraska.

Science, vol. xix, pp. 59 and 137.

Describes briefly the topographic features of the region.

427 **Hicks** (Lewis Ezra). Readjustments of the Loup rivers: examples of abstraction due to unequal declivities.

Science, vol. xix, pp. 288-290.

Discusses the question of the efficiency of abstraction to account for the capture of one stream by another and the changes which have taken place in the courses of the Loup rivers.

428 —— The geological structure and surface features of the region drained by the Loup rivers.

Neb. State Board of Agric., Ann. Rept. for 1892, pp. 337-359.

Describes the topographic features and the general character of the Tertiary beds of the Loup region.

429 **Hidden** (William Earl). On mackintoshite, a new thorium and uranium mineral; with analyses by W. F. Hillebrand.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 98-103.

Describes a new mineral from Texas and gives the chemical analyses of the material and a discussion of the composition.

430 —— Mineralogical notes.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 254-257.

Describes xenotime from North Carolina and jarosite from New Mexico.

431 —— and **Hillebrand** (W. F.). Description of rowlandite.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 208-212.

Describes the mineralogic characters of rowlandite from Llano County, Tex., including chemical analyses and a discussion of composition.

432 **Hilgard** (Eugene W.). The age and origin of the Lafayette formation.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 389-402.

Describes the beds as being predominately a ferruginous sand and the structure similar to that resulting from running and violently agitated waters. Extensive erosion preceded and followed its deposition. Discusses the evidence as to its geologic age and attributes the formation to a perion of high elevation, greater in northern latitudes.

433 —— The Cienegas of southern California.

Geol. Soc. Am., Bull., vol. iii, pp. 124-127.

Describes cienegas found in this region and the formations of which they are composed. Discusses their economic importance as a source of water supply.

434 —— Die Bodenverhältnisse Californiens.

Zeit. Deut. geol. Gesell., Band xlv, Heft 1, 1893, pp. 15-22.

Describes the general topographic and geologic features of California and discusses the evidence bearing on the character and extent of the various orographic movements.

435 **Hill** (R. T.). Paleontology of the Cretaceous formation of Texas. The invertebrate paleontology of the Trinity division.

Wash. Biol. Soc., Proc., vol. viii, pp. 9-40, pls. i-viii.

Reviews the literature on the stratigraphic divisions and nomenclature of the Comanche series. Describes the position and characteristics of the Trinity division. Discusses the general characters of the Trinity fossils and the age and significance of the Trinity beds, gives a list of fossils found in them and describes some of the species.

436 **Hill** (R. T.). The paleontology of the Cretaceous formation of Texas. The invertebrate fossils of the Caprina limestone beds.

Wash. Biol. Soc., Proc., vol. viii, pp. 97-108, pls. xii-xiii.

Describes the stratigraphic position of the Caprina limestone in the Comanche series, gives a list of characteristic fossils, discusses the age of the beds, and describes some of the species found in the Caprina limestone.

437 —— The occurrence of hematite and martite iron ores in Mexico.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 111-119.

Describes the geologic features of the Sierra de Mercado Mountain, in which the iron ore occurs, the occurrence of the ore bodies, and the chemical composition of the ore. Includes brief description of the iron ore bodies in other portions of Mexico occurring in rocks of Cretaceous and Tertiary age.

438 —— The Cretaceous formations of Mexico and their relations to North American geographic development.

Am. Jour. Sci , 3d ser., vol. xlv, pp. 307-324.

Abstract: Am. Nat., vol xxvii, pp. 657-658.

Classifies the formations into four groups and describes the lithologic character and structure of the Cretaceous. Discusses the age and homotaxial relations of the Comanche series, the extent and history of its sedimentation, and includes a table showing the known positions of the Comanche series and related formations in Mexico.

439 —— The deep artesian boring at Galveston, Tex.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 406-409.

Gives the vertical section as shown by the boring, which shows, by the absence of consolidated material, that the beds are Post-Cretaceous. Sedimentation took place in shallow water, and it is considered that the total subsidence of the Eocene shore line has been about 3,000 feet.

440 —— Notes on the Texas-New Mexican region.

Geol. Soc. Am., Bull., vol. iii, pp. 85-100.

Describes the remnant of Eocene occurring in this region and its relations to the mountains and plains area. Includes description of the other geologic formations and the volcanic area of eastern New Mexico.

441 —— The geologic evolution of the non-mountainous topography of the Texas region. An introduction to the study of the Great Plains.

Am. Geol., vol. x, pp. 105-115.

Gives a general statement concerning the topographic features at the close of the Paleozoic. Describes the processes of elevation and subsidence during Mesozoic and Tertiary times and the formation of the drainage systems during and since the close of the Tertiary.

442 —— Mexico as an iron-producing country.

Eng. Mag., vol. iv, pp. 744-753.

Describes the occurrence of the iron ores of Moncliva and those in the States of Jalisco and Guerero.

443 **Hill** (R. T.). On the occurrence of artesian and other underground waters in Texas, eastern New Mexico, and Indian Territory west of the ninety-seventh meridian.

Final Report of the Artesian and Underflow Investigation, part iii, Govt. Print. Office, Washington, 1892.

Abstracts: Am. Jour. Sci., 3d ser., vol. xliv, p. 333 (½ p.); Am. Nat., vol. xxvi, pp. 935-936.

Describes the general topographic and geologic features of the southwest portion of the United States, including a more detailed account of the Cretaceous beds.

444 —— Tucumcari.

Science, vol. xxii, pp. 23-25 (correspondence).

Refers to the writer's previously published opinions on the geology of Tucumcari and gives a vertical section of the mesa and a list of fossils which indicate the beds are of Cretaceous age.

445 **Hillebrand** (W. F.). Zinc-bearing spring waters from Missouri.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 418-422.

Describes the locality of the springs and gives chemical analyses of two samples.

445*a* —— **Hidden** (W. E.) and. Description of rowlandite.

See Hidden (W. E.) and Hillebrand (W. F.), 430.

446 **Hills** (R. C.). Coal fields of Colorado.

U. S. Geol. Surv., Min. Res., 1892, pp. 319-365.

The Coal Measures are of Upper Cretaceous age. The character of the coal shows great variations dependent on certain structural conditions and on the intrusion of eruptive masses. Describes the geographic and stratigraphic features of the various coal fields and gives analyses of the coals.

446*a* **Hills** (R. C.) Denver artesian basin.

Colo. Sci. Soc., Proc., vol. iv, p. 6 (½ p.).

In discussion of paper by P. H. van Diest, "On the artesian wells of Denver."

446*b* —— Remarks on the classification of the Huerfano Eocene.

Colo. Sci. Soc., Proc., vol. iv, pp. 7-9.

Refers to the author's former classification of these beds and discusses the evidences on which this classification is based.

446*c* —— Types of past eruptions in the Rocky Mountains.

Colo. Sci. Soc., Proc., vol. iv, pp. 14-32.

Includes brief remarks on the Pretertiary and Cenozoic eruptions in this region. Describes the structure of the Sangre de Christo, Henry, and La Plata mountains and the Spanish Peaks as being formed by intrusive bodies, and of the San Juan Mountains, the White River Plateau, Raton and Uinkaret mountains and Mount Taylor as being made up of extrusive bodies. Gives a table of the intrusive, extrusive, and tufaceous rocks, and describes briefly their distribution.

446*d* —— Twin crystals of selenite.

Colo. Sci. Soc., Proc., vol. iv, p. 32 (½ p.).

Brief note on the crystallographic character of selenite crystals said to have been found in a cave near Fort Stanton, N. Mex.

446*e* **Hills** (R. C.) [Post-Laramie beds of Middle Park, Colorado.]

Colo. Sci. Soc., Proc., vol. iv, pp. 213-214.

In discussion of paper by Whitman Cross on the same subject.

446*f* —— [Origin of ore deposits.]

Colo. Sci. Soc., Proc., vol. iv, pp. 351-353.

In discussion of paper by P. H. van Diest on the "Evidence bearing on the formation of ore deposits by lateral secretion."

447 **Hitchcock** (C. H.). Terminal moraines in New England.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xli, pp.173-175.

Locates the line of terminal moraines as determined by the author.

448 —— Studies of the Connecticut Valley glacier.

Geol. Soc. Am., Bull.. vol. iv., pp. 3-4.

Describes certain glacial phenomena in this region.

449 —— The Green Mountains anticlinal.

Science, vol. xx, p. 328.

Reviews previous publications on the geology of the Green Mountains. Describes the rock structure and relations to the anticlinal structure.

450 **Hobbs** (William H.). Notes on some pseudomorphs from the Taconic region.

Am. Geol., vol. x, pp. 44-48.

Describes briefly the microscopic character and chemical composition of the minerals and the rocks in which they were found in Connecticut.

451 —— New occurrence of parallel intergrowths of the minerals allanite and epidote.

Am. Geol., vol. xii., pp. 218-219.

Mentions several occurrences of this structure and refers specially to its occurrence in Maryland granites, described by C. R. Keyes.

452 —— Phases in the metamorphism of the schists of southern Berkshire.

Geol. Soc. Am., Bull., vol. iv., pp. 167-178.

Abstracts: Am. Geol., vol. xi, pp. 273-274 (½ p.); Am. Nat. vol. xxvii, p. 1087.

Describes the beds represented in the area and the origin and structure of the porphyritic constituents of the schists, and concludes that they originally formed part of a clastic rock and that the present structure is due to its partial recrystallization.

453 —— Secondary banding in gneiss.

Geol. Soc. Am., Bull., vol. iii, pp. 460-464.

Abstract: Am. Geol., vol, xi, pp. 59-60 (¼ p.).

The secondary banding consists of straight banding parallel to the foliation and is due to an alternation of layers of different mineral composition, which gives the rock the appearance of ordinary sedimentation.

454 —— On some metamorphosed eruptives in the crystalline rocks of Maryland.

Wis. Acad. Sci. Arts and Letters, Proc., vol. viii, pp. 156-160, pl. 1, figs. 1-3.

Gives an example of the metamorphism of gabbro into hornblende-gneiss and describes the general characteristics of the rock structures and their modifications in the vicinity of Baltimore.

455 **Hobbs** (W. H.). Note on cerussite from Illinois and Wisconsin.

Wis. Acad. Sci. Arts and Letters, Proc., vol. viii, pp. 399-400.

Gives crystallographic measurements of certain specimens.

456 —— On the geological structure of the Mount Washington mass of the Taconic range.

Jour. of Geol., vol. i, pp. 717-736.

Reviews the previous work within the area and describes the lithologic characters of the four subdivisions of the Silurian represented. Explains the areal geologic map and sections illustrating the structure of the mountain mass.

457 —— The geological structure of the Hoosatonic Valley lying east of Mount Washington.

Jour. of Geol., vol. i, pp. 780-802.

Refers to the literature concerning the region. Describes the lithologic characters of the Silurian strata and the geologic structure of the area, illustrated by map and sections, with a description of the great Hoosatonic fault.

458 —— On intergrowth of hornblende with augite in crystalline rocks.

Science, vol. xx, p. 354.

Gives results of some recent observations.

458*a* —— **Culver** (G. E.) and. On a new occurrence of olivine diabase in Minnehaha County, S. Dak.

See Culver (C. E.) and Hobbs (W. H.), 199.

459 **Hobson** (J. B.) and **Wiltsee** (E. A.). Nevada County.

Cal. State Min. Bur., 11th Rept., pp. 263-318.

Describes briefly the geologic features of the Grass Valley district, with notes on some of its mines, and the Nevada City mining district, with notes on the quartz and drift gravel mines, and includes notes on mines in other mining districts in this county.

460 **Hodson** (W. G.). Shasta County.

Cal. State Min. Bur., 11th Rept., pp. 395-399.

Notes on some of the gold mines.

461 **Hodge** (James M.). The Big Stone Gap coal field.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 922-938 and 1005-1006.

Abstract: North of Eng. Inst. of Min. and Mech. Engrs., Trans., vol. xliii, part vi, appendices, p. 39 (½ p.).

Describes the geology of the region, illustrated by sections of Little and Big Black Mountain and the geologic position of the different coal beds, with a statement as to the character of the coal found in each bed.

462 **Hoffman** (G. Christian). Chemical contributions to the geology of Canada from the laboratory of the Survey.

Can. Geol. Surv., Reports, vol. v, new series, Part II, 1890-91, Report R, p. 72.

Abstract: Am. Jour. Sci., 3d ser., vol. xlv, pp. 75-76.

Gives the locality from which each specimen was obtained and the chemical analysis of each of the different minerals, natural waters and ores mentioned.

463 **Hollick** (A.). The paleontology of the Cretaceous formation on Staten Island.

N. Y. Acad. Sci., Trans., vol. xi, pp. 96–102.

Abstract: Am. Jour. Sci., 3d ser., vol. xliv, p. 259 (½ p.).

Gives a list of fossils found and describes the general character of the Cretaceous beds on this island.

464 —— Preliminary contribution to our knowledge of the Cretaceous formation on Long Island and eastward.

N. Y. Acad. Sci., Trans., vol. xi, pp. 222–237.

Reviews the literature on the Cretaceous of this region and describes plant remains found in Cretaceous clays.

465 —— Additions to the paleobotany of the Cretaceous formation on Staten Island.

N. Y. Acad. Sci., Trans., vol. xii, pp. 28–39.

Abstract: Am. Jour. Sci., 3d ser., vol. xlv, p. 437 (¼ p.).

Describes plant remains from the Cretaceous of Staten Island.

466 —— Plant distribution as a factor in the interpretation of geological phenomena, with special reference to Long Island and vicinity.

N. Y. Acad. Sci., Trans., vol. xii, pp. 189–202.

Describes the flora of New York, New Jersey, and New England and its relation to the geology of the region.

467 —— Paleobotany of the Yellow gravel at Bridgeton, N. J.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xli, pp. 177–178; Torr. Bot. Club, Bull., vol. xix, pp. 330–333.

468 —— A new fossil palm from the Cretaceous formation of Glen Cove, Long Island.

Torr. Bot. Club, Bull., vol. xx, pp. 168–169, pl. cxlix.

Describes Serenopsis kempii, n. gen.

468*a* **Hollick** (Arthur), **Kemp** (J. F.) and. The granite at Mounts Adam and Eve, Warwick, Orange County, N. Y.

See Kemp (J. F.) and Hollick (A.), 520.

469 **Holmes** (J. A.). Character and distribution of road materials.

Elisha Mitchell Sci. Soc., Jour., part ii, 1892, pp. 66–87.

Gives a table showing the coefficients of wear and crushing of different road materials. Describes those rocks which are suitable as road materials and their distribution in the Coastal Plain, Piedmont and Mountain regions of some of the Eastern and Southeastern States.

470 **Hopkins** (T. C.). The Eureka shale of northern Arkansas.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 256–257.

The shale occurs between the Silurian and Carboniferous and is widely but unequally distributed. The interval was marked by a depression of such depth that but little sediment was deposited during Upper Silurian and Devonian times.

471 **Houser** (Gilbert L.). Some lime-burning dolomites and dolomitic building stones from the Niagara of Iowa.

Iowa Geol. Surv., 1st Ann. Rept., 1892, vol. i, pp. 199–207.

Describes the character and chemical composition of the limestone and its exposures at different localities.

472 **Hubbard** (George C.). The cystidians of Jefferson County, Indiana.

Ind. Acad. Sci., Proc., 1891, p. 67.

Brief reference to locality where these fossils are found.

473 —— Hudson River fossils of Jefferson County, Indiana.

Ind. Acad. Sci., Proc., 1891, p. 68.

Includes list of species from this horizon.

474 —— The upper limit of the Lower Silurian at Madison, Indiana.

Ind. Acad. Sci., Proc., 1891, pp. 68-70.

Statement concerning the fossil evidence which indicates the line between the Upper and Lower Silurian in this locality.

474*a* **Hubbard** (Lucius L.), **Koenig** (G. A.) and. On powellite from a new locality.

See Koenig (G. A.) and Hubbard (L. L.), 562.

475 **Hulst** (D.). The iron ore deposits of a portion of the Menominee range, Michigan.

Abstract: Eng. and Min. Jour., vol. lv, p. 366.

476 **Hunt** (Alfred E.). Aluminum.

U. S. Geol. Surv., Min. Res., 1892, pp. 227-254.

Describes the deposits from which aluminum ores are obtained, the metallurgical processes involved in its reduction, and the properties of aluminum.

476*a* **Huntington** (Oliver W.), **Kunz** (G. F.) and. On the diamond in the Canyon Diablo meteoric iron and on the hardness of carborundum.

See Kunz (F.) and Huntington (O. W.), 568.

477 **Hyatt** (Alpheus). Jura and Trias at Taylorsville, California.

Geol. Soc. Am., Bull., vol. iii, pp. 395-412.

Abstracts: Am. Nat., vol. xxvii, pp. 470-471; Am. Jour. Sci., 3d ser., vol. xliv, p. 330 (½ p.); Am. Geol., vol. x, p. 183 (½ p.).

Names many of the species found in the Jurassic and Triassic formations and compares them with similar European species. From the facts cited it appears that the Jura occurs only in widely separated areas and that the deposits of Mount Jura furnish a larger number of fragments of the Jurassic system than any other known locality in the United States.

478 —— Carboniferous cephalopods. Second paper.

Texas Geol. Surv., 4th Ann. Rept., pp. 379-474.

Describes the method used in determining generic characters and explains the meaning of terms used and the plate of diagrams used to explain the terms more fully. Describes the genera and species of cephalopods from the Carboniferous of Texas.

479 —— The fauna of Tucumcari.

Am. Geol., vol. xi, p. 281 (½ p.) (correspondence).

Refers to criticisms by Jules Marcou.

480 —— Remarks on the Pinnidæ.

Boston Soc. Nat. Hist., Proc., vol. xxv, pp. 335-346.

Gives a general description of the Pinnidæ

I.

481 **Iddings** (Joseph Paxson). A dissected volcano of Crandall basin, Wyoming.

Jour. of Geol., vol. i, pp. 606–611.

Describes the general geologic structure of the region and the petrographic characters of the volcanic rocks, with remarks on the degrees of crystallization shown in rocks which occurred at approximately the same depth beneath the volcano, viz., 10,000 feet or more.

482 —— Genetic relationships among igneous rocks.

Jour. of Geol., vol. i, pp. 833–844.

Describes the differences and gradations in chemical and mineralogic composition of different varieties of igneous rocks, the consanguinities of rocks of the same petrographic province, the peculiarities which may distinguish the rocks of one province from those of another, and the general principle of magmatic differentiation which govern the differences and consanguinities.

483 —— The origin of igneous rocks.

Washington Phil. Soc., Bull., vol. xii, pp. 89–214, pl. ii.

Abstracts: Am. Geol., vol. xii, pp. 124–125; Am. Jour. Sci., 3d ser., vol. xliv, pp. 257–258; Am. Nat., vol. xxvii, pp. 40–42.

Gives a historical review of the literature of the subject. Discusses the evidence indicating the consanguinity of igneous rocks, the character, cause and results of the differentiation of molten magmas and the localization of volcanic phenomena. Concludes that the consanguinity of the various rocks of a natural group is shown by their mineralogic, chemical, and geologic relationships, and that the differentiation of a common magma is established by the geologic occurrence and order of eruption of the members of the group, and that this differentiation is of a chemico-physical nature. Eleven tables of rock analyses.

484 —— The eruptive rocks of Electric Peak and Sepulchre Mountain, Yellowstone National Park.

U. S. Geol. Surv., 12th Ann. Rept., part i, pp. 577–664, pls. xlvi–liii.

Abstract: Am. Jour. Sci., 3d ser., vol. xliv, p. 429 (½ p.).

Gives a geologic sketch of the region. Describes the diorite, porphyrite, and dike rocks of Electric Peak and the andesite, dacite, and tuff of Sepulchre Mountain, and discusses their correlation and classification as igneous rocks.

485 —— Microscopical petrography of the eruptive rocks of the Eureka district, Nevada.

U. S. Geol. Surv., Monograph XX, Appendix B, pp. 337–396.

Gives a petrographic description of the eruptive rocks of the Eureka district, including granite, andesite, dacite, rhyolite, and basalt.

486 —— On a group of volcanic rocks from the Tewan Mountains, New Mexico, and on the occurrence of primary quartz in certain basalts.

U. S. Geol. Surv., Bull. No. 66.

Abstract: Am. Geol., vol. ix, pp. 264–265 (½ p.).

486*a* **Indiana, Dept. of Geol. and Nat. Resources,** Seventeenth Report.

Abstract: Am. Geol., vol. xi, p. 349 (½ p.).

487 **Ingall** (E. D.). On the cherts and domolites of the Animikie rocks of Thunder Bay, Lake Superior.

Can. Rec. Sci., vol. v, pp. 29-38.

Describes the character of the cherts and dolomites and states that they apparently form interchangeable members of the series. Describes microscopic characters of several specimens, which show the alteration to have been by chemical action, unaccompanied by the more powerful forces of metamorphism.

488 **Ingalls** (W. R.). Aluminum in the United States.

Abstract: North of Eng. Inst. of Min. and Mech. Engrs., Trans., vol. xlii, p. 388.

488*a* **Iowa Geological Survey**, First Annual Report, 1890.

Abstracts: Am. Nat., vol. xxvii, pp. 985-987; Am. Jour. Sci., 3d ser., vol. xlvi, pp. 397-398; Am. Geol., vol. xii, pp. 337-339; Jour. of Geol., vol. i, pp. 747-751.

489 **Irving** (Roland Duer) and **Van Hise** (C. R.). The iron-bearing series of Michigan and Wisconsin.

U. S. Geol. Surv., Monograph XIX, pls. i-xxxvii, figs. 1-12.

Gives an account of previous geologic explorations in this region and their literature. Describes the relations of the formations, their character and extent, and the microscopic characters of the rocks examined in thin sections, including granites of the southern complex, cherty limestones, quartz and actinolitic slates and diabases. . Discusses the origin of the rocks of the iron-bearing members and the position and concentration of the ore bodies.

490 —— The Penokee iron-bearing series of Michigan and Wisconsin.

U. S. Geol. Surv., 10th Ann. Rept., part i, pp. 341-507.

Abstract: Am. Geol., vol. ix, pp. 207-208.

Noticed in Record of 1891.

J.

491 **James** (James F.). Manual of the Paleontology of the Cincinnati group.

Cin. Soc. Nat. Hist., Jour., vol. xiv, pp. 45-72, and 149-163, and vol. xv, pp. 88-100 and 144-159.

Locates and describes species found in this group.

492 —— The preservation of plants as fossils.

Cin. Soc. Nat. Hist., Jour., vol. xv, pp. 75-78.

Describes briefly some of the modes of the preservation of plants as fossils.

493 —— Studies in problematic organisms, No. II. The Genus Fucoides.

Cin. Soc. Nat. Hist., Jour., vol. xvi. pp. 62-81.

Reviews the previous literature on the definition and classification of fucoids and gives a list of species now recognized.

494 —— Remarks on the Genus Arthrophycus Hall.

Cin. Soc. Nat. Hist., Jour., vol. xvi, pp. 82-86.

Reviews the literature describing this fossil and the question as to its generic designation.

495 **James** (James F.). Fossil fungi.

Cin. Soc. Nat. Hist., Jour., vol. xvi, pp. 94–100.

Contains a translation of a portion of an article published in the Revue Mycologique, April, 1893, from the French of M. Ferry, with remarks upon other papers concerning fungoid bodies.

496 —— Studies in problematic organisms. The Genus Scolithus.

Geol. Soc. Am., Bull., vol. iii, pp. 32–44.

Abstract: Am. Nat., vol. xxvi, pp. 240–242.

Refers to previous descriptions of Scolithus and gives a list of species of this genus described from North America, and considers that from this its geologic range appears to be from the Lower Cambrian to the Triassic.

497 —— The Cincinnati ice dam.

Am. Geol., vol. xi, pp. 199–202.

Describes certain glacial phenomena which indicate the existence of an ice dam at this locality during the Glacial period.

498 —— On the age of the Point Pleasant, Ohio, beds.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 283–284.

Reviews the opinions of other writers on the age of these beds. Describes the section at this point and considers there is no evidence to justify classifying them with the Trenton.

499 —— On problematic organisms and the preservation of algæ as fossils.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, p. 284.

Considers that algæ are not included in the species referred to the class from lower rocks, and that the supposed tracks, trails, and burrows are more likely due to inorganic causes.

499*a* **Jefferis** (William W.), **Rand** (T. D.) and **Cardeza** (J. T. M.). Mineral localities of Philadelphia and vicinity.

See Rand (T. D.), Jefferis (W. W.) and Cardeza (J. T. M.), 771.

500 **Johnson** (Guy R.). Methods of working and surveying the mines of the Longdale Iron Company, Virginia.

Am. Inst. Min. Engrs., Trans., vol. xx, pp. 96–107.

This ore body is occasionally overlain by Helderberg limestone, and the latter is overlain by Devonian shale. Describes the method of opening the ground and of surveying the mines.

501 **Johnson** (Lawrence C.). The Grand Gulf formation.

Science, vol. xx, pp. 151 and 247.

Describes the Pascagoula embayment, and states that it is a branch of the great Mississippi embayment.

502 —— The Miocene group of Alabama.

Science, vol. xxi, pp. 90–91.

Describes the occurrence of Miocene strata at various localities in Alabama.

503 —— Notes on the geology of Florida; two of the lesser but typical phosphate fields.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 497–503.

Describes the general character of the strata of Eocene and Miocene age, and the plate rock deposits, including a discussion as to the origin of the latter deposits.

504 —— The Chattahoochee embayment.

Geol. Soc. Am., Bull., vol. iii, pp. 128-133.

This embayment is an extension of the bay of Apalachee, and the deposits are very impure limestones. They form the base upon which lie the phosphates of the region. Gives sections of the beds at several localities.

505 **Jones** (Arthur J.). St. Louis limestone in Poweshiek County, Iowa.

Science, vol. xxii, p. 307 (correspondence).

Mentions the finding of exposures of St. Louis limestone in this county.

505*a* **Jones** (J. T.), **Winchell** (H. V.) and. The Biwabik mine.

See Winchell (H. V.) and Jones (J. T.), 1067.

506 **Jones** (T. Rupert). On some fossil Ostracoda from southwest Wyoming and from Utah, U. S. A.

Geol. Mag., dec. iii, vol. x, pp. 385-391.

Describes some species from the Cretaceous of Wyoming and Utah.

507 **Jordan** (E. T. J.). The gas area.

Ind. Dept. Geol. and Nat. Hist., 17th Rept., 1891, pp. 328-364.

Describes the general extent of the gas area in Indiana, the occurrence of gas, and the conditions which govern its production.

508 **Jukes-Browne** (A. J.) and **Harrison** (J. B.). The geology of Barbados. Part II. The oceanic deposits.

Geol. Soc. Quart. Jour., vol. xlviii, pp. 170-226.

Discusses the evidences of the submergence of the Caribbean region and Central America in Pliocene time and considers that there was free communication between the Atlantic and the Pacific during the late Tertiary.

K.

509 **Keith** (Arthur). The geologic structure of the Blue Ridge in Maryland and Virginia.

Am. Geol., vol. x, pp. 362-368.

The sedimentary rocks consist of the valley limestone and the shales and sandstones of the mountain region, the sequence being in the order given from the top downward. Describes the stratigraphic and structural relations of the igneous and sedimentary rocks.

510 —— Geology of Chilhowee Mountain in Tennessee.

Washington Phil. Soc., Bull., vol. xii, pp. 71-88, pl. i.

States that the structure is synclinal and the mountain is formed of the oldest sedimentary rocks. Discusses the lithologic evidences bearing on the age of the limestone series and the contact relations of the beds. Concludes that the Chilhowee-Knox interval indicates that the Appalachian folding and faulting began after the deposition of the first Paleozoic beds instead of the last.

511 **Kellogg** (D. S.). Glacial phenomena in northeastern New York.

Science, vol. xix, p. 341.

Describes some glacial deposits in this region.

512 **Kemp** (J. F.). The great shear-zone near Avalanche Lake, in the Adirondacks.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 109-114.

Describes the region in which it occurs and the general mineralogic characteristics of the rock of the shear-zone and of the country rock.

513 **Kemp** (J. F.) A basic dike near Hamburg, Sussex County, N. J., which has been thought to contain leucite.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 298–305.

Refers to descriptions of other elæolite-syenite areas.

Gives a map showing the geology of the region in which the dike occurs, describes its petrographic characters, and gives chemical analyses.

514 —— The classification of ore deposits.

School of Min. Quart., vol. xiv, pp. 8–24.

Reviews the methods of classification of ore deposits adopted by other writers and gives the author's classification.

515 —— The ore deposits of the United States.

The Scientific Publishing Company, New York, 1893.

Abstract: Am. Geol., vol. xii, pp. 268–269.

516 —— Notes on the Lower Coal Measures of western Clearfield County, Pa.

School of Min. Quart., vol. xiv, pp. 349–353.

Describes the geologic structure in this region and gives a vertical section showing the thicknesses of the coal seams and associated strata.

517 —— The elæolite-syenite near Beemerville, Sussex County, N. J.

N. Y. Acad. Sci., Trans., vol. xi, pp. 60–71.

Abstracts: Geol. Soc. Am., Bull., vol. iii, pp. 83–84; Am. Nat., vol. xxvii, pp. 272–273 (½ p.).

Describes the petrographic characters and chemical composition of the dike rock. Compares this rock with other elæolite-syenites.

518 —— A review of the work hitherto done on the geology of the Adirondacks.

N. Y. Acad. Sci., Trans., vol. xii, pp. 19–24.

Reviews the literature on the geology of the Adirondacks.

519 —— On the occurrence of gabbro (norite) near Van Artsdalen's quarry, Bucks County, Pa.

N. Y. Acad. Sci., Trans., vol. xii, p. 71.

Describes the petrographic characters of the specimens.

520 —— and **Hollick** (A.). The granite at Mounts Adam and Eve, Warwick, Orange County, N. Y., and its contact phenomena.

N. Y. Acad. Sci., Annals, vol. vii, pp. 638–650.

Describes the stratigraphic relations of the limestones of the region, the petrographic characters of the granite and limestone and their contact phenomena. Accompanied by geologic map and sections.

521 —— and **Marsters** (V. F.). The trap dikes of the Lake Champlain region.

U. S. Geol. Surv., Bull., No. 107. pp. 11–62.

Describes the general topographic and geologic features, the distribution of the dikes, the petrographic characters of the various dike rocks, including bostonite, breccia bostonites, diabases, camptonites, monchiquites, and fourchites, with chemical analyses, and discusses the geologic relations of the dikes at different localities.

522 **Kennedy** (W.). Report for 1891.

Texas Geol. Surv., 2d Rept. of Prog., 1891, pp. 55–69.

Describes the relations of the Cretaceous, Tertiary, and Quaternary strata of eastern Texas and the contained beds of salt, lignite, iron ores, building stones, and clays.

523 **Kennedy** (W.). Houston County [Texas].

Texas Geol. Surv., 3d Ann. Rept., 1891, pp. 7-40.

Describes the general geology of the county, including beds of Recent, Quaternary, Miocene, and Eocene formations; also the soils, iron ores, lignites, building stones, and clays.

524 —— A section from Terrell, Kaufman County, to Sabine Pass, on the Gulf of Mexico [Texas].

Texas Geol. Surv., 3d Ann. Rept., pp. 43-125.

Describes the Cretaceous, Eocene, Miocene, Pleistocene, and Recent deposits, and gives detailed sections at many localities.

525 —— Report on Grimes, Brazos, and Robertson Counties [Texas].

Texas Geol. Surv., 4th Ann. Rept., pp. 1-84.

Describes the topographic features of each of the counties named, the lithologic character of the Recent and Tertiary beds, giving the sections displayed at several localities, and includes a description of the soils, building stones, coal, and other economic resources of the region.

526 —— Texas clays and their origin.

Science, vol. xxii, pp. 297-300.

Gives chemical analyses of clays from Ohio, Kentucky, and Arkansas. Describes the character of the Tertiary deposits of Texas and discusses the question of their origin.

527 **Keyes** (Charles Rollin). Eastern extension of the Cretaceous in Iowa.

Iowa Acad. Sci., Proc., vol. i, part ii, p. 21.

Brief notes on the recent discovery of some Cretaceous fossils in a sandstone near Des Moines.

528 —— Age of certain sandstones near Iowa City [Iowa].

Iowa Acad. Sci., Proc., vol. i, part ii, p. 26 (½ p.)

Brief note on a sandstone at this locality, provisionally assigned to the Kinderhook group of the Carboniferous.

529 —— Notes on the Redrock sandstone [Iowa].

Iowa Acad, Sci., Proc., vol. i, part ii, pp. 26-27.

Describes the lithologic character of the sandstone of Carboniferous age occurring in Marion County, Iowa, and discusses the evidences indicating its former extension.

530 —— Natural gas and oil in Iowa.

Iowa Acad. Sci., Proc., vol. i, part iii, pp. 15-18.

Discusses the general manner of accumulation of oil and the evidences indicating that such conditions are fulfilled in Iowa rocks.

531 —— Iowa Mineralogical notes.

Iowa Acad. Sci., Proc., vol. i, part iii, pp. 18-22.

Describes occurrences of pyrite, calcite, gypsum, millerite and the occurrence of granite and olivine diabase in northwestern Iowa.

532 —— Surface disintegration of granitic masses.

Iowa Acad. Sci., Proc., vol. i, part iii, pp. 22-24.

Describes particularly the disintegration of same Maryland granites.

533 —— Some American eruptive granites.

Iowa Acad. Sci., Proc., vol. i, part iii, pp. 24-26.

Discusses the theories as to the origin of large granitic masses and describes the field relations, inclusions, and contact phenomena of certain Maryland granites.

534 **Keyes** (Charles Rollin). Geological formations of Iowa.

Iowa Geol. Surv., 1st Ann. Rept., 1892, vol. i, pp. 13–144.

Gives the general geologic section of Iowa. Describes the lithologic characters and relations of the Cambrian, Silurian, Devonian, and Carboniferous strata, with more detailed description of the Coal Measures, Cretaceous, and Quaternary formations. Accompanied by colored geologic map of the State and sections.

535 —— Annotated catalogue of minerals.

Iowa Geol. Surv., 1st Ann. Rept., vol. i, 1892, pp. 183–196.

Contains a list of minerals found in Iowa, with brief notes on their occurrence and mineralogic characters.

536 —— Bibliography of Iowa geology.

Iowa Geol. Surv., 1st Ann. Rept., vol. i, 1892, pp. 211–464.

Gives a list of papers treating of the geology of Iowa.

537 —— The Platyceras group of Paleozoic gasteropods.

Am. Geol., vol. x, pp. 273–277.

Mentions the difficulties which attend an attempt at separation of certain members of this group, gives a list of American platycerata assigned to each of three easily recognized groups, and describes the growth of the gasteropod shell.

538 —— The present basal line of delimitation of the Carboniferous in northeastern Missouri.

Am. Geol., vol. x, pp. 380–384.

Discusses the fossil evidences found in the Kinderhook beds, which, though hitherto assigned to the Lower Carboniferous, yield fossils of Devonian facies. Considers that there is marked unconformity between the Carboniferous and Devonian instead of the regular sequence of strata heretofore assumed.

539 —— The unconformity of the Coal Measures and the St. Louis limestone in Iowa.

Am. Geol., vol. xii, p. 99–102.

Describes briefly the lithologic character of the Carboniferous rocks and the movements of elevation and subsidence occurring during their deposition.

540 —— A new locality for millerite.

Am. Geol., vol. xi, p. 126.

Remarks on an occurrence of millerite in geodes in Keokuk limestone.

541 —— The principal Mississippi section.

Geol. Soc. Am., Bull., vol. iii, pp. 283–300.

Abstracts: Am. Geol., vol. x, p. 125 (½ p.); Am. Nat., vol. xxvi, p. 1027.

Gives the section at several localities. Divides the rocks into the Kinderhook, Osage, St. Louis, and Kaskaskia groups. Describes the lithologic character of the beds and their geologic structure.

542 —— Some Maryland granites and their origin.

Geol. Soc. Am., Bull., vol. iv, pp. 299–304.

Mentions localities where the granites occur, reviews the two theories of the origin of these granites, and discusses the evidence bearing on this question.

543 —— Epidote as a primary component of eruptive rocks.

Geol. Soc. Am., Bull., vol. iv, pp. 305–312.

Describes the occurrence and characteristics of epidote-bearing rocks and its mineralogic associate, allanite, and the character and abundance of epidote in Maryland granites.

544 **Keyes** (Charles Rollin). Sketch of the coal deposits of Iowa.

U. S. Geol. Surv., Min. Res., 1892, pp. 398–404.

Describes the strata in which the coal seams occur and states that they cover nearly one-third the surface of the State. The coal basins are thicker in the center and gradually become attenuated toward the margins.

545 —— An old volcanic eruption in Iowa.

Science, vol. xxi, p. 132.

Describes the occurrence of a basic rock of eruptive origin and mentions an occurrence of quartz-porphyry in the same region.

546 —— "Nickel ore" from Iowa.

Eng. and Min. Jour., vol. liv, p. 634.

Refers to the report of finding nickel ore in Iowa and mentions an occurrence in the Keokuk limestone of calcite covered with needles of millerite.

547 —— A remarkable fauna at the base of the Burlington limestone in northeastern Missouri.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 447–452.

Gives a vertical section, with a statement as to the geologic age of the different beds and a list of the characteristic fossils. The fauna are predominantly molluscan, typical of the Kinderhook beds, presenting a marked instance of a lower fauna suddenly appearing in the midst of a higher, with practically no change of lithologic characters.

548 —— and **Call** (R. E.). On a Quaternary section 8 miles southeast of Des Moines, Iowa.

Iowa Acad. Sci., Proc., vol. i, part ii, p. 30 (½ p.).

Brief description of the section and list of fossils found in the loess.

549 **King** (Clarence). The age of the earth.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 1–20.

Abstract: Jour. of Geol., vol. i, pp. 202–203.

Gives results of a physical investigation, by Barus, of diabase as bearing upon the probable density and composition of the outer crust of the earth. In Pl. I variations of earth pressures and temperatures for radius are given, showing that the latter cease to increase within one-tenth radius from the surface. Pl. II indicates the distribution of earth temperatures and melting points of diabase for the superficial 0.08 of radius. Discusses Kelvin's and Croll's estimates of earth-time and earth-age as measured by sun-age, and concludes that the earth's age of about 24 million years accords with the estimate of that of the sun of 15 to 20 million years.

550 **Kirby** (Edmund B.). The ore deposits of Creede and their possibilities.

Eng. and Min. Jour., vol. liii, pp. 325–326.

Describes the geologic formations of the region and the veins or fissures in which the valuable minerals are found.

551 **Kloos** (J. H.). Geognostic and geographic observations in the State of Minnesota.

Minn. Geol. and Nat. Hist. Surv., 19th Ann. Rept., pp. 81–121.

General description of drift deposits in the State, the Lower Silurian and Archean of the Upper Mississippi, the Cretaceous and crystalline rocks of Sauk Valley, the Lower Silurian and Huronian melaphyre of the St. Croix Valley, the Upper Huronian slates of St. Louis River and the Silurian melaphyre and gabbro of Lake Superior with a résumé of results.

552 **Knowlton** (F. H.). Notes on a few fossil plants from the Fort Union group of Montana, with a description of one new species.

U. S. Nat. Mus., Proc., vol. xvi, pp. 33-36, pls. i-ii.

Describes and figures Populus meedsii n. sp. and Pterospermites cupanioides Newby.

553 —— Bread-fruit trees in North America.

Science, vol. xxi, pp. 24-25.

Describes the geographic distribution of certain species of bread-fruit trees in western North America, existing in Miocene or Pliocene time.

554 —— Note on a supposed new endogenous tree from the Carboniferous.

Science, vol. xxi, pp. 332-333.

Reviews the description of Winchellina fascina and considers that it may belong to one of the recently differentiated genera of the genus Psaronius.

555 —— Flora of the Dakota group, by Leo Lesquereux. Edited by F. H. Knowlton.

See Lesquereux (Leo), 582.

556 —— [Letter to I. C. Russell on fossil wood from the Triassic of North Carolina and review of Triassic plants of Prince Edward Island.]

U. S. Geol. Surv., Bull. No. 85, p. 29.

Refers to certain species from Prince Edward Island heretofore referred to the Trias which the writer considers are mostly Paleozoic.

557 —— Report on interglacial earth from Iowa.

U. S. Geol. Surv., 11th Ann. Rept., part i, p. 493.

Considers the material to be largely of vegetable origin and to belong either to the genus Juniperus or Thuya.

558 —— Description of a new fossil species of Chara.

Bot. Gazette, vol. xviii, pp. 141-142.

Describes Chara stantoni n. sp. from the Bear River Cretaceous formation of Wyoming.

559 —— Annotated list of fossil plants of the Bozeman, Montana, coal field, with table of distribution and description of new species.

U. S. Geol. Surv., Bull. No. 105, pp. 43-63, pls. v-vi.

Abstracts: Am. Jour. Sci., 3d ser., vol. xliv, p. 334 (½ p.); Wash. Biol. Soc., Proc., vol. vii, pp. 153-154.

Mentions the localities and the collectors of the material on which the paper is based, gives a list of species and description of new species, a table showing their geologic distribution, and discusses their value in confirming the results of stratigraphy.

560 —— Report on fossil plants from near Ellenburg, Washington.

U. S. Geol. Surv., Bull. No. 108, Appendix, pp. 103-104.

Gives a list of species and a brief description of them, with a statement as to their value in determining the age of the beds in which they were found.

561 **Koenig** (George A.). Paramelaconite and footeite.
Abstract: Am. Jour. Sci., 3d ser., vol. xliii, p. 158 (½ p.).

562 —— and **Hubbard** (L. L.). On powellite from a new locality.
Am. Jour. Sci., 3d ser., vol. xlvi, pp. 356–358.
Describes the mineralogic character and chemical composition of material obtained from Houghton County, Mich.

563 **Krassnof** (A. N.). The "black earth" of the steppes of southern Russia.
Geol. Soc. Am., Bull., vol. iii, pp. 68–81.
Describes the influence of the climate and relative age of the ground and subsoil on the properties of "black earth" and discusses the question of its geologic age. Discussed by E. W. Hilgard and G. C. Broadhead.

564 **Kummel** (Henry B.). Some rivers of Connecticut.
Jour. of Geol., vol. i, pp. 371–393.
Describes some of the topographic features of the State, the character of the Cretaceous peneplain, and the effects of the post-Cretaceous uplift. Discusses the changes that have taken place in certain rivers since Mesozoic time.

565 **Kunz** (George F.). Mineralogical notes on brookite, octahedrite, quartz, and ruby.
Am. Jour. Sci., 3d ser., vol. xliii, pp. 329–330.

566 —— Mineralogical notes on brookite, octahedrite, and quartz.
Cal. State Min. Bur., 11th Rept., 1893, pp. 207–209.
Notes on minerals found in Eldorado County, Cal.

567 —— Precious stones.
U. S. Geol. Surv., Min. Res., 1893, pp. 680–702.
Describes sapphire deposits of Montana, the occurrence of rubies in North Carolina, of tourmaline in Maine and California, and of opal in Idaho.

568 —— and **Huntington** (Oliver W.) On the diamond in the Canyon Diablo meteoric iron and on the hardness of carborundum.
Am. Jour. Sci., 3d ser., vol. xlvi, pp. 470–473.
Gives the results of different experiments on the Canyon Diablo iron, one of them showing the material to be diamond or a similar substance. Experiments with carborundum show that it would not scratch or polish a diamond, and therefore is inferior to it in hardness.

L.

569 **Ladshaw** (George E.). Spartanburg, S. C., gold fields.
Eng. and Min. Jour., vol. liv, p. 52 (correspondence).
Describes the placer deposits occurring in this vicinity and the character of the associated gravel and clay beds.

570 **Lampard** (Henry). A few notes on an extinct volcano at Montreal, Canada.
Abstract: Am. Assoc. Adv., Proc., vol. xl, p. 260 (4 l.).
Descriptive geology and notes on minerals occurring in dikes.

571 **Langdon** (Daniel W.). Leaf impressions in the Eocene Tertiary of Alabama.

Science, vol. xxi, pp. 94–95 (correspondence).

Mentions localities in this State where there are occurrences of Tertiary fossil leaves.

572 **Lapworth** (C.). [Address as president of the Section of Geology.]

Brit. Assoc. Adv. Sci., Rept. 1892, pp. 695–707; Am. Geol., vol. x, pp. 225–242.

Discusses the phenomena of folds and faults and their influence on the form and structure of the earth's crust. Incidentally refers to the structure of the mountain ranges of America.

573 **Lawson** (Andrew C.). The Cordilleran Mesozoic revolution.

Jour. of Geol., vol. i, pp. 579–586.

Reviews the previous work in this region. Considers that the pre-Cretaceous Mesozoic revolution affected the entire extent of the Cordilleras, though it may not have been synchronous in all parts. Batholitic magmas were developed, invading and replacing large portions of the crust, and cooled as acid plutonic rocks. They were followed by continental uplift; hence the conditions commonly accepted as Archean are not peculiar to rocks of that age.

574 —— The Norian rocks of Canada.

Science, vol. xxi, pp. 281–282.

Reviews the monograph on norian rocks by Frank D. Adams, gives localities where anorthosite rocks occur, and some of the results of their study.

575 —— The anorthosites of the Minnesota shore of Lake Superior.

Minn. Geol. and Nat. Hist. Surv., Bull. No. 8, pp. 1–23.

Abstracts: Am. Geol., vol. xii, p. 59; Am. Nat., vol. xxvii, p. 898.

Refers to previous descriptions of the rocks. Describes the petrographic characters and gives chemical analyses and discusses the geologic relations of the anorthosites.

576 —— The laccolitic sills of the northwest coast of Lake Superior.

Minn. Geol. and Nat. Hist. Surv., Bull. No. 8, pp. 24–48.

Abstract: Am. Geol., vol. xii, pp. 59–60.

Reviews the literature on the rocks of this district and discusses the theories advanced as to the relations of the trap sheets. Describes the petrographic characters of diabase and quartz-porphyry and their contact relations and phenomena.

577 —— Sketch of the coastal topography of the north side of Lake Superior, with special reference to the abandoned strands of Lake Warren.

Minn. Geol. and Nat. Hist. Surv., 20th Ann. Rept., pp. 181–289.

Abstract: Am. Geol., vol. xi, pp. 356–357.

Gives a brief statement concerning the formations bordering on Lake Superior and the conditions peculiar to each. Discusses the relations of the topography to the rock structure and describes the coastal contours and profiles. Concludes that Lakes Superior, Michigan, and Huron are remnants of the greater Lake Warren and occupy its subordinate depressions.

578 **LeConte** (Joseph). Theory of the origin of mountain ranges.

Jour. of Geol., vol. i, pp. 542-573; Sci. Amer. Suppl., vol. xxxvi, pp. 14768-14769 and 14776-14778.

Describes the structure of mountain ranges and the character of the materials of which they are composed. Theories are divided into two classes, the formal theory and the causal or physical theory. Gives the formal theory in detail and discusses the contractional and the alternative physical theories, and concludes that, in spite of many objections, the former still affords the best working hypothesis among causal theories.

579 **Lenke** (H.), **Felix** (J.) and. Beitrage zur Geologie und Paleontologie der Republik Mexico.

See Felix (J.) and Lenke (H.), 316.

579a —— Ueber die tektonischen Verhältnisse der Republik Mexico.

See Felix (J.) and Lenke (H.), 317.

580 **Lesley** (J. P.). A summary description of the geology of Pennsylvania.

Pa. Geol. Surv., Final Report, vol. i, pp. 1-719.

Abstract: Am. Jour. Sci., 3d ser., vol. xliii, p. 536 (¼ p.).

Contains a discussion of some primary geologic principles, classification, and nomenclature, and a description of the Laurentian, Huronian, Cambrian, and Lower Silurian formations of the State, which includes a description of the crystalline gneisses and schists and their typical exposures, the geology of South Mountain, the Primal slates and their iron mines, and the limestones of the Great Valley, its subdivisions and deposits of iron, lead, and zinc, and the fossils found in these limestones.

581 —— A summary description of the geology of Pennsylvania.

Pa. Geol. Surv., Final Report, vol. ii, pp. 721-1628.

Abstract: Am. Jour. Sci., 3d ser., vol. xlv, p. 73 (6 l.).

Describes the Upper Silurian and Devonian formations, including a description of the Clinton sandstones, shales, and slates, and their fossil iron-ore bodies, and the Niagara limestone and Salina shales and their fossils, as exposed in various portions of the State.

582 **Lesquereux** (Leo). The flora of the Dakota group. A posthumous work, edited by F. H. Knowlton.

U. S. Geol. Surv., Monograph XVII, 1892, pls. i-lxvi.

Abstracts: Jour. of Geol., vol. i, pp. 300-302; Am. Geol., vol. xii, pp. 328-329; Am. Nat., vol. xxvii, p. 1079 (¾ p.).

Includes description of the species found in the Dakota group and a table showing their distribution in other formations and countries.

583 —— The Genus Winchellia.

Am. Geol., vol. xii, pp. 209-213.

Describes its characters and contains correspondence concerning the adoption of the name Winchellia.

584 **Leverett** (Frank). The glacial succession in Ohio.

Jour. of Geol., vol. i, pp. 127-146.

Abstract: Am. Geol., vol. xi, pp. 413-415.

Discusses the phenomena attending the different stages of the glacial epoch and the evidences which indicate the existence of an interval of deglaciation. Summarizes the present knowledge concerning the altitude in each stage. Accompanied by a map showing the area covered by the Maumee-Miami glacier.

585 **Leverett** (Frank). On the significance of the white clays of the Ohio region.

Am. Geol., vol. x, pp. 18–24.

Abstract: Am. Nat., vol. xxvii, p. 148.

The distribution of the clays shows that their deposition was not connected with an ice dam at or below Cincinnati. Compares them with the Upper Mississippi Valley silts, and considers that the deposition of the clays took place under conditions similar to those of the latter.

586 —— The Cincinnati ice dam.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 250–251.

Concludes that the theory of an ice dam at this point is questionable, since the silt deposits are too widespread and were deposited upon and are separated from the ice drift by a considerable time interval.

587 —— On the correlation of moraines with raised beaches of Lake Erie.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 281–301; Wis. Acad. Sci. Arts and Letters, Proc., vol. viii, pp. 233–240.

Abstracts: Jour. of Geol., vol. i, pp. 99–100; Am. Nat., vol. xxvi, pp. 412–414.

Discusses the evidence of the existence of lakes in the drift-covered area of Ohio toward the close of the Glacial period. Considers that in its earlier stages Lake Erie occupied but a portion of its present area, the remainder being covered by the ice sheet. The extension of the lake area followed the retreat of the ice sheet, the beaches were replaced by lateral moraines, and it is probable that similar moraines will be found to connect with the beaches of Lake Ontario.

588 —— Notes bearing upon the changes in the pre-Glacial drainage of western Illinois and eastern Iowa.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xli, p. 176 (½ p.).

589 —— Relation of the attenuated drift border to the outer moraine in Ohio.

Am. Geol., vol. xi, pp. 215–216 (correspondence).

590 **Lewis** (Julia F.). H. Carvill Lewis's work on the glacial phenomena.

Science, vol. xix, pp. 305–306.

In a letter to Prof. G. F. Wright gives a summary of Professor Lewis's later views on glacial phenomena.

591 **Lincoln** (D. F.). Glaciation in the Finger Lake region of New York.

Am. Jour. Jour. Sci., 3d ser., vol. xliv, pp. 290–301.

Abstract: Am. Geol., vol. xii, pp. 177–178 (½ p.).

Gives a general sketch of the geology and topography of the country, illustrated by a map. Discusses the evidence concerning the pre-Glacial topography and the amount of glacial corrasion.

592 **Lindgren** (Waldemar). The gold deposit at Pine Hill, California.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 92–96.

Abstract: Eng. and Min. Jour., vol. liv, p. 610.

Brief description of the occurrence of gold deposits in California and of the locality in which this deposit occurs. The gold in many places is associated with barite in irregular veins or seams in a zone of decomposed or kaolinized diabase.

593 **Lindgren** (Waldemar). Notes on the geology and petrography of Baja California, [Mexico].

Cal. Acad. Sci., Proc., 2d ser., vol. iii, part i, pp. 25-33.

Gives the results of the study of rock specimens obtained in this region and a general statement of the orographic movements that have taken place.

594 —— The relation between ore deposits and their inclosing walls.

Eng. and Min. Jour., vol. lv, pp. 340-341.

Reviews a previous article on the same subject, with statements concerning the "lateral secretion" theory and the manner of occurrence of gold in California.

595 —— Sacramento sheet.

U. S. Geol. Surv., Geol. atlas of the U. S., Preliminary edition, 1892.

Gives a general outline of the geologic history of the Gold Belt region of California. Describes the topographic features, the character of the auriferous slates, igneous rocks, and the Cretaceous, Miocene, and Pleistocene strata. Accompanied by topographic, colored areal and economic geologic, and structure-section maps.

596 —— The auriferous veins of Meadow Lake, California.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 201-206.

Describes the distribution and general character of the rocks of the district, illustrated by a sketch map, and the structure of the ore deposits and the character of the ore and gangue material.

597 —— Eruptive rocks from Montana.

Cal. Acad. Sci., Proc., 2d ser., vol. iii, part. i, pp. 39-57.

Abstract: Am. Nat., vol. xxvi, p. 698 (8 l.).

These rocks do not occur as lava flows, but as dikes, sheets, or laccolites in sedimentaries. Describes the megascopic and microscopic characters of the rocks, which include dacites, hornblende-andesites, diorites, augite-syenites, trachytes, and basalts.

598 —— A sodalite-syenite and other rocks from Montana, with analyses by W. H. Melville.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 286-297.

Abstracts: Jour. of Geol., vol. i, pp. 634-638; Am. Nat., vol. xxvii, pp. 563-564; Am. Jour. Sci., 3d ser., vol. xlvi, p. 76 (⅓ p.).

Describes the geologic occurrence of the rocks from which the specimens were collected and their petrographic character, with tables showing their chemical composition.

599 —— Two Neocene rivers of California.

Geol. Soc. Am., Bull., vol. iv, pp. 257-298.

Abstracts: Am. Geol., vol. xii, p. 121 (¾ p.); Am. Nat., vol. xxvii, p. 1084 (⅓ p.).

Reviews the literature on the Sierra Nevada region and gives a summary of its geologic history, illustrated by cross sections. Describes the course of the Neocene rivers, Yuba and American, and their gravel deposits. Concludes that the Neocene Sierra Nevada formed a distinct mountain range similar to the modern one. Includes a map of the Recent and Neocene drainage systems and the grades of the Neocene rivers.

600 **Low** (A. P.). Report on the geology and economic minerals of the southern portion of Portneuf, Quebec, and Montmorency counties, Quebec.

Can. Geol. Surv., Reports, vol. v, new series, 1890-91, part i, Report L, 71 pp.

Describes the Archean rocks, the Trenton limestone, and Utica shale, and the distribution of the Trenton, and gives lists of fossils found in it. Describes the glacial phenomena and gives a list of post-Pliocene fossils found.

601 —— Notes on the glacial geology of western Labrador and northern Quebec.

Geol. Soc. Am., Bull., vol. iv, pp. 419-421.

Describes the glacial phenomena of the region and the extent of Pleistocene changes of level in Labrador.

602 **Lucas** (F. A.). On Carcharodon mortoni Gibbes.

Wash. Biol. Soc., Proc., vol. vii, pp. 151-152.

Considers that the characters of the teeth of C. mortoni Gibbes, described by Gibbes, are due to an accident while young and that it should stand as a synonym of C. megalodon Agassiz.

603 **Ludeking** (C.). Synthesis of the minerals crocoite and phænicrocoite.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 57-58.

604 **Lyman** (Benjamin Smith). The great Mesozoic fault in New Jersey.

Am. Phil. Soc., Proc., vol. xxxi, No. 142, pp. 314-317.

Describes the topographic and geologic features which indicate the existence of this fault.

605 —— An occurrence of coarse conglomerate above the mammoth anthracite bed.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 713-719.

Presents a geologic and topographic map of a portion of Schuylkill County, Pa., where the conglomerate occurs, and discusses the geologic structure of the region and the relation between the coal beds and conglomerate.

M.

606 **McBride** (T. H.). A new cycad.

Am. Geol., vol. xii, pp. 248-250.

Describes and figures specimens from South Dakota considered to be from Lower Cretaceous or Jura-Trias rocks.

607 **McCalley** (Henry). Alabama bauxite.

Eng. and Min. Jour., vol. liv, p. 584; Science, vol. xx, p. 303.

Describes the geologic features of its occurrence and gives a chemical analysis.

608 **McCallie** (S. W.). Remains of the mastodons recently found in Tennessee.

Science, vol. xx, p. 333.

Brief description of the portions discovered.

609 **McCharles** (A.). The Algoma nickel mines [Ontario].

Eng. and Min. Jour., vol. liv, p. 147 (correspondence).

Contains brief description of the geologic occurrence of the ore bodies in the Province of Ontario.

610 **McConnell** (R. G.). Report on a portion of the district of Athabasca, comprising the country between Peace River and Athabasca River north of Lesser Slave Lake.

Can. Geol. Surv., Reports, vol. v, new series, 1890-91, part i, Report D, 62 pp.

Describes the general physical features of the region. Gives several sections, with lists of fossils obtained, which consist of Devonian and Cretaceous types. The Cretaceous apparently overlies the Devonian conformably. The unequal distribution of glacial deposits produces a rolling type of country, and to it is due the large number of lakes and ponds which cover a considerable portion of its area. Gold was found in the bars of the rivers, and deposits of bitumen and indications of gas and oil were found.

611 **McCreath** (A. S.) and **D'Invilliers** (E. V.). The Clinch Valley coal fields.

U. S. Geol. Surv., Min. Res., 1892, pp. 521-528.

The Coal Measures belong to the Middle Coal series of Virginia and West Virginia, identical with the Lower Productive Coal series of Pennsylvania, which, in this region, carry five well-marked coal beds.

612 **McFarland** (R. W.). The close of the Ice age in North America.

Science, vol. xxii, pp. 45-46.

Reviews some of the theories on this question.

613 **McGee** (W J). The Gulf of Mexico as a measure of isostasy.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 177-192.

Abstracts: Am. Geol., vol. xi, p. 58 (½ p.); Geol. Soc. Am., Bull., vol. iii, pp. 501-503.

Discusses the evidences of the instability of the continents and of the encroachments of the sea in the region of the Gulf of Mexico. Concludes that the modern movement is slight, while the old movements were cataclysmic; that the land and sea are here in a state of hydrostatic equilibrium, and that these observations are corroborated by data from other prominent deposition tracts of the globe.

614 —— The Pleistocene history of northeastern Iowa.

U. S. Geol. Surv., 11th Ann. Rept., part i, pp. 199-577, pls. i-lxi, figs. 1-120.

Abstracts: Am. Geol., vol. xi, pp. 178-179; Am. Jour. Sci., 3d ser., vol. xlv, p. 71.

Contains a discussion of geologic principles, a description of the geologic formations of the region, their deformation, the topographic features and glacial phenomena.

615 —— The Lafayette formation.

U. S. Geol. Surv., 12th Ann. Rept., part i, pp. 353-521.

Abstract: Am. Jour. Sci., 3d ser., vol. xlv, p. 163 (5 l.).

Describes the geologic formations of the Atlantic Coastal Plain and their economic resources and reviews the geologic history of the Lafayette formation.

616 —— Note on the "age of the earth."

Science, vol. xxi, pp. 309-310.

Discusses the different estimates of the duration of the different geologic periods and presents a table showing the mean, minimum, and maximum estimates of the various geologic ages.

617 **McGee** (W J). The field of geology and its promise for the future.

Minn. Acad. Nat. Sci., Bull., vol. iii, pp. 191–206.

Discusses the general principles of geology and presents a classification of geologic processes.

618 —— The areal work of the United States Geological Survey.

Am. Geol., vol. x, pp. 377–379.

Gives a general description of its work since the organization of the present Survey.

619 —— Rock gas and related bitumens. Introduction to "The natural gas field of Indiana," by A. J. Phinney.

U. S. Geol. Surv., 11th Ann. Rept., part i, pp. 589–616.

Describes the constitution and geologic distribution of bitumens and discusses the origin of rock gas and other bitumens.

620 —— Neocene and Pleistocene continent movements.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 253–254.

Gives a brief history of continental oscillations. Concludes that there were two periods of rapid oscillations; each submergence was comparatively short and immediately followed by a maximum high level, and that the two are separated by a great time interval.

621 —— [Glacial phenomena.]

Geol. Soc. Am., Bull., vol. iv, pp. 5–6 and 6–7.

In discussion of paper by C. H. Hitchcock, "Studies of the Connecticut Valley glacier."

622 —— A fossil earthquake.

Abstract: Geol. Soc. Am., Bull., vol. iv, pp. 411–414.

Discusses the origin of certain dome structures of the Mississippi Valley.

622*a* **McInnes** (W.), **Bailey** (L. W.) and. Report on portions of the Province of Quebec and adjoining areas in New Brunswick and Maine.

See Bailey (L. W.) and McInnes (W.), 23.

623 **MacMechen** (Thomas R.). The ore deposits of Creede, Colo.

Eng. and Min. Jour., vol. liii, pp. 301–303.

Describes the geologic formations of the region and the nature and extent of the ore bodies.

624 **Marcou** (Jules). The Tucumcari fossils.

Science, vol. xxi, pp. 358–360.

Reviews the determinations of certain fossils from this region.

625 —— On the classification of the Dyas, Trias, and Jura in northwest Texas.

Am. Geol., vol. x, pp. 369–377.

Discusses the classification and nomenclature for the strata in northwest Texas used in the second and third annual reports of the Geological Survey of Texas.

626 —— Second supplement to "Mapoteca Geologica Americana," 1752–1881.

Am. Geol., vol. xi, pp. 95–99.

Gives titles of maps, date, and place of publication.

627 **Marcou** (Jules). Remarks on a part of the review of the Third Texas Report.
Am. Geol., vol. xi, pp. 212-214 (correspondence).
Reviews statements concerning the geology of the Tucumcari region.

628 —— Cerro Tucumcari.
Am. Geol., vol. xii, pp. 103-107.
Refers to statements in paper by W. F. Cummins, "Tucumcari Mountain," and gives a brief historical sketch of the early expeditions in this region.

629 **Margerie** (M. Emm. de). Sur la découverte de phénomènes de recouvrement dans les Appalaches.
Soc. Géol. de France, Bull., 3d ser., vol. xix, No. 7, pp. 426-429.
Describes the phenomena of overthrusting in the Appalachian province and compares them with similar phenomena in southern France.

630 —— [Letter to G. K. Gilbert concerning the Bibliography undertaken by the International Congress of Geologists.]
Am. Jour. Sci., 3d ser., vol. xliii, pp. 71-73; Am. Geol., vol. ix, pp. 64-67.
Gives list of members of the committee and minutes of the first meeting.

631 **Marsh** (O. C.). The skull of Torosaurus.
Am. Jour. Sci., 3d ser., vol. xliii, appendix, pp. 81-84, pls. 2.

632 —— Discovery of Cretaceous Mammalia, Part III.
Am. Jour. Sci., 3d ser., vol. xliii, appendix, pp. 249-262, pls. v-xi.
Describes briefly the characteristics of Cretaceous Mammalia and their bearing upon the determination of the relationships of Cretaceous and Tertiary deposits, followed by description of several species.

633 —— Notice of new reptiles from the Laramie formation.
Am. Jour. Sci., 3d ser., vol. xliii, appendix, pp. 449-453.

634 —— Notes on Triassic Dinosauria.
Am. Jour. Sci., 3d ser., vol. xliii, appendix, pp. 543-546.
Review: Am. Nat., vol. xxvi, pp. 410-412.

635 —— Notes on Mesozoic vertebrate fossils.
Am. Jour. Sci., 3d ser., vol. xliv, appendix, pp. 171-176, pls. ii-v.

636 —— Restoration of Claosaurus and Ceratosaurus.
Am. Jour. Sci., 3d ser., vol. xliv, appendix, pp. 343-349.

637 —— Restoration of Mastodon americanus Cuvier.
Am. Jour. Sci., 3d ser., vol. xliv, appendix, p. 350.

638 —— A new Cretaceous bird allied to Hesperornis.
Am. Jour. Sci., 3d ser., vol. xlv, appendix, pp. 81-82.
Describes remains found in Montana.

639 —— The skull and brain of Claosaurus.
Am. Jour. Sci., 3d ser., vol. xlv, appendix, pp. 83-86.
Describes the skull of Claosaurus found in Ceratops beds of Wyoming.

640 —— Restoration of Anchisaurus.
Abstract: Am. Jour. Sci., 3d ser., vol. xlv, appendix, pp. 169-170.
Describes some of the characters of the species and discusses its possible relation to the "bird tracks" of the Connecticut River sandstone.

641 **Marsh** (O. C.). Restoration of Coryphodon.

Am. Jour. Sci., 3d ser., vol. xlvi, appendix, pp. 321–326.

Reviews the literature concerning the Coryphodon and describes the restoration of one of its species.

642 —— Description of Miocene Mammalia.

Am. Jour. Sci., 3d ser., vol. xlvi, appendix, pp. 407–412, pls. vii–x.

Describes specimens from New Jersey and the Rocky Mountain region, which indicate a common horizon in the two regions.

643 —— Restoration of Mastodon americanus Cuvier.

Sci. Amer. Suppl., vol. xxxiv, p. 14085.

Gives a brief account of other restorations and of the characteristics of this species. Illustrated by sketch.

644 **Marshall** (D. T.). Pyrite incrustations of the Cretaceous formations of Middlesex County, N. J.

Science, vol. xix, p. 151.

Describes some incrustations and replacement of trunks, twigs, and bark by iron pyrites.

645 **Marshall** (William B.). Report on a deposit of marl and peat in the town of New Baltimore.

N. Y. State Mus., 45th Ann. Rept., pp. 46–52.

The marl is composed of shells of fresh-water Mollusca and carbonate of lime. The peat and muck on its surface is an accumulation of mosses and other plants.

645*a* **Marsters** (Vernon Freeman), **Kemp** (J. F.) and. The trap dikes of the Lake Champlain region.

See Kemp (J. F.) and Marsters (V. F.), 521.

646 **Matthew** (G. F.). List of the fossils found in the Cambrian rocks in and near St. John.

New Brunswick Nat. Hist. Soc., Bull. No. 10, pp. xi–xxiii.

Describes briefly the lithologic character of the Cambrian beds of St. John basin and gives their thickness as 3,550 feet. Gives a list of 157 fossils found in these beds, which shows their stratigraphic position in the series.

647 —— Protolenus. A new genus of Cambrian trilobites.

New Brunswick Nat. Hist. Soc., Bull. No. 10, pp. 34–37.

Describes Protolenus n. gen., and Protolenus elegans n. sp., and Protolenus paradoxides from the St. John group of Canada.

648 —— The climate of Acadia in the earliest times.

New Brunswick Nat. Hist. Soc., Bull. No. 11, pp. 3–18.

Describes the general climatic conditions of this region and the character of the fauna from Cambrian to Devonian time.

649 —— Notes on Cambrian faunas.

Can. Rec. Sci., vol. v, pp. 247–258.

Describes a hitherto unrecognized group of trilobites and correlates the faunas based on these four species.

650 —— Trematobolus. An articulate brachiopod of the inarticulate order.

Can. Rec. Sci., vol. v, pp. 276–279.

Abstract: Am. Geol., vol. xii, p. 396 (¼ p.).

Describes a shell from the pre-Paradoxides beds of the St. John group and discusses its different affinities.

651 **Matthew** (G. F.). Is the fauna called "Primordial" the most ancient fauna?

Can. Rec. Sci., vol. v, pp. 347-350.

Describes the metamorphosis of the Cambrian trilobites and mentions the discovery of radiolarian remains in Azoic rocks of Great Britain.

652 —— On the diffusion and sequence of the Cambrian faunas.

Can. Roy. Soc., Proc. and Trans., vol. x, sect. iv, pp. 3-16.

Describes the development of graptolites and other deep-water organisms. Reviews the opinions of other writers concerning the distribution of Cambrian faunas, and presents in tabular form the migration of their genera.

653 —— Illustrations of the fauna of the St. John group, No. VII.

Can. Roy. Soc., Proc. and Trans., vol. x, sect. iv, pp. 85-109.

Abstract: Am. Geol., vol. xii, pp. 192-193.

Describes the fauna of the Arenig horizon in the Bretonian division; also some graptolites and brachiopods of the same division.

654 —— Illustrations of the fauna of the St. John group, No. VIII.

Can. Roy. Soc., Proc. and Trans., vol. xi, sect. iv, pp. 85-129.

Describes species chiefly from the St. John group and gives a list of Cambrian and Ordovician fossils found near St. John.

655 —— The St. John group.

Am. Geol., vol. xii, pp. 340-341 (correspondence).

656 **Matthew** (W. D.). On phosphate nodules from the Cambrian of southern New Brunswick.

N. Y. Acad. Sci., Trans., vol. xii, pp. 108-120.

Gives the subdivisions and lithologic characters of the St. John group and describes the megascopic and microscopic characters of the nodules. Compares them with other phosphate deposits and discusses the question of their origin.

657 —— On antennæ and other appendages of Triarthrus beckii.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 121-125; N. Y. Acad. Sci., Trans., vol. xii, pp. 237-241.

Abstract: Am. Geol., vol. xii, pp. 193-194 (½ p.).

Refers to the study of the trilobites by C. D. Walcott, with special reference to the organs of the under side, and gives a summary of the structure thus determined. Describes trilobites found in the Hudson River shales in New York and the structure of the antennæ preserved in the specimens.

658 **Meeds** (A. D.). The Stillwater deep well.

Minn. Acad. Nat. Sci., Bull., vol. iii, pp. 274-277.

Gives brief description of the rocks penetrated by the well, the section shown by the well record, and the microscopic characters of a diabase porphyrite occurring at a depth of 3,300 feet.

659 **Memminger** (C. G.). [Phosphate deposits of Tennessee.]

U. S. Geol. Surv., Min. Res., 1893, pp. 709-711.

Gives the section of the Tennessee phosphate beds and chemical analyses of samples. Describes its physical characteristics.

660 **Merrill** (George Perkins). On some basic eruptive rocks in the vicinity of Lewiston and Auburn, Androscoggin County, Me.

Am. Geol., vol. x, pp. 49-55.

Describes the rock formations of the region and the basic dikes which cut them. Shows the location and direction of the dikes on a sketch map. Describes the microscopic characters of the dike rocks, diabase, and lamprophyrs, and gives several chemical analyses.

661 —— The wind as a factor in geology.

Eng. Mag., vol. ii, pp. 596-607.

Describes some results of the action of wind in cutting away and transporting the material of the earth's crust.

662 —— Notes on the petrography of the Paleozoic section in the vicinity of Three Forks, Montana.

U. S. Geol. Surv., Bull. No. 110, pp. 47-54.

Describes the petrographic characters of gneissic rocks of the region and certain fragmental rocks which appear to have been derived from them, and the character of some intrusive rocks occurring in the lower part of the Flathead shales.

663 —— The newer eruptive rocks.

Boston Soc. Nat. Hist., Occasional Papers IV, vol. i, part i, pp. 31-44.

Describes the eruptive rocks occurring in the form of lava flows and dikes. The lava flows include melaphyrs and porphyrites. The dikes consist chiefly of diabases.

664 —— and **Packard** (R. L.). On an azure-blue pyroxenic rock from the Middle Gila, New Mexico.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 279-280.

Gives a mineralogic and chemical description of the rock, occurring in serpentinous limestones, which has the formula of malacolite.

665 **Meyer** (Abraham). Notes on the occurrence of quartz and other minerals in the Chemung measures near the line of Lycoming and Tioga counties, Pennsylvania.

Phila. Acad. Nat. Sci., Proc., 1893, part i, pp. 194-196.

Describes some quartz crystals and gives the names of the associated minerals.

666 —— Pyrophyllite slates in northern Pennsylvania.

Phila. Acad. Nat. Sci., Proc., 1893, part i, pp. 197-200.

Describes some exposures of the Chemung beds of Pennsylvania.

667 **Mickle** (George). Notes on nickel.

Can. Inst., Trans., vol. ii, part i, pp. 77-92.

Contains notes on the occurrence of nickel, its mineral associates, and its metallurgy.

668 **Miers** (H. A). Quartz from the Emerald and Hiddenite mines.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 420-424.

Describes the crystallographic characters of quartz crystals from North Carolina.

669 **Miller** (S. A.). The structure, classification, and arrangement of American Paleozoic crinoids into families.

Ind. Dept. Geol. and Nat. Hist., 16th Rept., 1888, pp. 302-326.

Reviews the opinions of several writers on the structure and classification of crinoids and describes some of their important family characteristics.

670 **Miller** (S. A.). Paleontology.

Ind. Dept. Geol. and Nat. Hist., 17th Rept., 1891, pp. 611-705, pls. i-xx.

Describes species found in Silurian, Devonian, and Carboniferous series of Indiana and Missouri.

671 —— and **Faber** (C.). Description of some sub-Carboniferous and Carboniferous Cephalopoda.

Cin. Soc. Nat. Hist., Jour., vol. xiv, pp. 164-168.

Describes species from Coal Measures in Kentucky and near Kansas City, Mo.

672 —— Some new species and new structural parts of fossils.

Cin. Soc. Nat. Hist., Jour., vol. xv, pp. 79-87.

Abstract: Am. Geol., vol. x, pp. 316-317.

Describes specimens obtained from the Hudson River group from near Cincinnati.

673 **Miller** (S. A.) and **Gurley** (F. E.). Description of some new genera and species of Echinodermata from the Coal Measures and sub-Carboniferous rocks of Indiana, Missouri, and Iowa.

Ind. Dept. Geol. and Nat. Hist., 16th Rept., 1888, pp. 327-373.

Contains description of new genera and species of Echinodermata from the Carboniferous of the States mentioned.

674 **Mills** (James E.). Stratigraphy and succession of the rocks of the Sierra Nevada of California.

Geol. Soc. Am., Bull., vol. iii, pp. 413-444.

Abstracts: Am. Geol., vol. x, pp. 318-319; Am. Nat., vol. xxvii, p. 147 (½ p.).

Repeated uplifts along the same axes, followed by erosion, mark the orographic history of this range, and the present relief is due to Tertiary and Quaternary uplifting. Granites form the core and the great mass of the range and constitute the principal part of the pre-Mesozoic rocks. The Mesozoic sediments are mainly slates and some limestones. The eruptives consist of medium basic lavas altered to diabases or greenstones, and very basic lavas altered to serpentines.

675 **Mitchell** (R. H.) and **Baskerville** (C.). An example of river adjustment.

Elisha Mitchell Sci. Soc., Jour., part ii, 1892, pp. 64-66.

Describes and illustrates the processes of adjustment that have occurred in certain tributaries of the James River in Virginia.

676 **Moore** (Joseph). The recently found Casteroides in Randolph County, Indiana.

Am. Geol., vol. xii, pp. 67-74.

Describes the locality where the remains were found, gives a list of parts found and those missing and broken, some measurements, and a list of fragments from the same and other localities.

677 —— An inquiry as to the cause of variety in rock deposits as seen in Hudson River beds at Richmond, Indiana.

Ind. Acad. Sci., Proc., 1892, pp. 26-27.

Describes briefly some of the deposits in this vicinity.

678 **Moore** (Joseph). Glacial and pre-Glacial erosion in vicinity of Richmond, Indiana.

Ind. Acad. Sci., Proc., 1892, pp. 27–29.

Mentions a buried river channel and the discovery of potholes in this locality.

679 **Moses** (Alfred J.). One of the gypsum crystals from the cave at South Wash, Wayne County, Utah.

Science, vol. xxi, pp. 230–231.

Gives the crystallographic measurements of the crystal.

680 —— Mineralogical notes.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 488–492.

Describes the mineralogic characteristics of pyrite crystals and ettringite, including chemical analyses of the latter.

681 **Moxham** (Edgar C.). The "Great Gossan lead" of Virginia.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 133–138.

Describes the extent and character of an ore body in southwest Virginia which carries copper and iron, with special reference to the iron contents.

682 **Mudge** (E. H.). Observations along the valley of Grand River, Michigan.

Am. Geol., vol. xii, pp. 284–288.

Describes the glacial phenomena of this region.

N.

683 **Nason** (Frank L.) The Magnesian series of the Ozark uplift.

Am. Geol., vol. xi, pp. 91–94.

Refers to the previous classification of the Magnesian series and gives results of observations in the Ozark region. Concludes that there is but one continuous bed of sandstone in this area, and proposes for it the name of Roubidoux and for the underlying heavy-bedded limestone the name Gasconade.

684 —— Notes on some of the iron-bearing rock of the Adirondack Mountains.

Am. Geol., vol. xii, pp. 25–31.

Describes minerals associated with the magnetite ores of New York and New Jersey, and gives a brief description of several ore bodies in this region.

685 —— "The correct succession of the Ozark series;" a review reviewed.

Am. Geol., vol. xii, pp. 141–147.

Reviews statements in paper by G. C. Broadhead, "The correct succession of the Ozark series," with special reference to the separation and classification of the sandstone and magnesian limestone of the Ozark region.

686 —— A report on the iron ores of Missouri.

Mo. Geol. Surv., vol. ii, 1892, pp. 1–365, pls. i–viii, figs. 1–62.

Gives a general description of iron ores and their relative values. Describes the specular ores of the porphyry region and those of the Iron Mountain and Pilot Knob districts, the red hematites of the State, the geology of the Ozark uplift, the specular ore of the sandstone district and the limonite ores. Appendix A is a description of the iron deposits of northeastern Arkansas. Appendix B contains a historical and statistical sketch of the iron industry.

687 **Nelson** (N. P.). The formation of a terrace.

Am. Geol., vol. xii, pp. 125-126 (correspondence).

Describes the topographic features of a beach ridge in Ottertail County, Minn.

688 **Nitze** (H. B. C.) Notes on some of the magnetites of southwestern Virginia and the contiguous territory of North Carolina.

Am. Inst. Min. Engrs., Trans., vol. xx, pp. 174-188.

Describes magnetite deposits of Franklin and Henry counties, Va., and of Stokes County, N. C. Includes a description of the ore bodies in the different sections and analyses of some of the ores. Discussed by Edmund Pechin, pp. 185-188.

689 —— The magnetic iron ores of Ashe County, N. C.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 260-280.

Describes various ore bodies of the region, with chemical analyses, their location being shown on an accompanying map.

690 —— Magnetic iron ore in Granville County, N. C.

Eng. and Min. Jour., vol. liii, p. 447.

Describes the rocks with which the ore is associated and gives a chemical analysis of the ore.

691 —— Iron ores of North Carolina. A preliminary report.

N. C. Geol. Surv., Bull. No. 1, pp. 21-239, pls. i-xx, figs. 1-58, and map of the State showing the distribution of the iron ore deposits.

Describes the different varieties of iron ores, the bog ores of the eastern counties, the magnetite, specular and brown hematite ores of the eastern, central, and western crystalline areas, the titaniferous magnetites, the iron ores of the Blue Ridge and its eastern foothills and the chromic iron ores of the chrysolite rocks. Gives chemical analyses of iron ores from many counties of the State.

O.

692 **Orton** (Edward). First Annual Report of the Geological Survey of Ohio, 1890, Third Organization, pp. 1-323.

Chapter 1 contains the geological scale of Ohio and a sketch of its geologic structure. Other chapters comprise a discussion of the origin and accumulation of petroleum and natural gas in the Trenton and Clinton limestones and other sources of oil and gas.

693 —— Origin of the rock pressure of natural gas in the Trenton limestone of Ohio and Indiana.

Smithsonian Inst., Ann. Rept., 1891, pp. 155-162.

Discusses the causes of rock pressure, the evidence supporting the hydrostatic theory, and the general laws of gas production.

694 —— On the occurrence of a quartz bowlder in the Sharon coal of northeastern Ohio.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 62-63.

Comparison of bowlders found with those found in England and description of the strata in which they occur in Ohio.

695 —— Report on the occurrence of petroleum, natural gas, and asphalt rock in western Kentucky.

Abstracts: Am. Geol., vol. ix, pp. 262-263 (½ p.); Am. Jour. Sci., 3d ser., vol. xliv, p. 78 (½ p.).

Noticed in Record for 1891.

696 **Osann** (A.). Ueber ein Mineral der Nosean-Hauyn-Gruppe im Eläolith-syenit von Montreal.

Neues Jahrb. f. Min., etc., Band i, Heft 1, 1892, pp. 222–224 (correspondence).

Describes the geologic occurrence of the rock and its megascopic, microscopic, and chemical characters.

697 —— Melilite-nepheline basalt and nepheline basanite from southern Texas.

Jour. of Geol., vol. i, pp. 341–346.

Describes the petrographic characters of specimens from this region.

698 —— Report on the rocks of Trans-Pecos, Texas.

Texas Geol. Surv., 4th Ann. Rept., pp. 123–138.

Describes the petrographic characters of the igneous rocks of this region, which include granites from the Quitman Mountain, olivine diabase from the Diablo Mountains, elæolite and nepheline bearing rocks from the Davis Mountains, and a series of highly altered diabase rocks, showing ophitic structure, from the Carrizo Mountains.

699 **Osborn** (Henry Fairchild). Fossil mammals of the Upper Cretaceous beds.

Am. Mus. Nat. Hist., Bull., vol. v, pp. 311–330.

Describes the characters of the teeth of certain Cretaceous mammals and discusses their relationship to the older Jurassic and more recent Eocene types. Concludes that the Laramie fauna is distinctly separated from the Jura and more nearly related to the basal Eocene forms and that the number of distinct types is limited.

700 —— Aceratherium Tridactylum from the Lower Miocene of Dakota.

Am. Mus. Nat. Hist., Bull., vol. v, pp. 85–86.

Describes the remains from the Miocene of South Dakota.

701 —— The rise of the Mammalia in North America.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 379–392 and 448–466.

Gives a general historical sketch of the previous study of Mammalia, discusses the general principles on which their classification is based, and exhibits in tabular form the succession of North American Mammalia and their geologic distribution.

702 —— The Ancylopodia, Chalicotherium, and Artionyx.

Am. Nat., vol. xxvii, pp. 118–133.

Describes and compares some of their leading characters and discusses their relations and proper classification.

703 —— Recent researches upon the succession of the teeth in mammals.

Am. Nat., vol. xxvii, pp. 493–508.

Describes the researches bearing upon this question and gives a general summary of the work done and the conclusions that are to be drawn from it.

704 —— A reply to Professor Marsh's "Note on Mesozoic Mammalia."

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, p. 290 (¼ p.).

Discusses the structure of a number of Mesozoic mammals.

705 —— The ancestry of Chalicotherium.

Science, vol. xix, p. 276.

Refers to some recent discoveries of this species and considers that they were derived from the Meniscotheridæ.

706 **Osborn** (Henry Fairchild). Sur la découverte du Palæonictis en Amérique.

Soc. Geol. de France, Bull., 3d ser., vol. xx, No. 7, pp. 434–436.

Describes the character of Palæonictis found in the Wasatch beds of the Rocky Mountains.

707 —— and **Wortman** (J. L.). Fossil mammals of the Wasatch and Wind River beds.

Am. Mus. Nat. Hist., Bull., vol. iv, pp. 81–147.

Abstract: Am. Jour. Sci., 3d ser., vol. xlv, pp. 159–160.

Includes the following special articles: homologies and nomenclature of the mammalian molar cusps; the classification of the Perissodactyla; the ancestry of the Felidæ; taxonomy and morphology of the primates, creodonts, and ungulates, 1 Wasatch, 2 Wind River; geological and geographical sketch of the Big Horn basin; and narrative of the expedition of 1891.

708 —— Characters of Protoceras (Marsh), the new Artiodactyl from the Lower Miocene.

Am. Mus. Nat. Hist., Bull., vol. iv, pp. 351–371.

Abstracts: Am. Jour. Sci., 3d ser., vol. xlv, p. 160 (½ p.); Am. Nat., vol. xxvii, pp. 147–148.

Description of species and discussion of characters of species recently found.

709 —— Artionyx, a new genus of Ancylopoda.

Am. Mus. Nat. Hist., Bull., vol. v, pp. 1–18.

Describes remains found in the Miocene of South Dakota.

P.

710 **Packard** (R. L.). Genesis of nickel ores.

U. S. Geol. Surv., Min. Res., 1893, pp. 170–177.

Describes the occurrence of nickel in different deposits and reviews some of the theories as to their origin.

711 —— Natural sodium salts.

U. S. Geol. Surv., Min. Res., 1893, pp. 728–738.

Describes the lakes of Utah, Nevada, and California in which sodium salts have become concentrated and gives in tabular form the composition of the salts and discusses their origin.

711*a*—— **Merrill** (G. P.) and. On an azure-blue pyroxenic rock from the Middle Gila, New Mexico.

See Merrill (G. P.) and Packard (R. L), 664.

712 **Page** (William H.). The Carboniferous age and the origin of coal.

Eng. and Min. Jour., vol. lvi, pp. 347–349.

Reviews the generally accepted theory of the character of the Carboniferous period and the origin of its coal beds, and discusses evidences which conflict with this theory.

713 **Panton** (J. Hoyes). The mastodon and mammoth in Ontario, Canada.

Brit. Assoc. Adv. Sci., Report 1891, pp. 654–655.

Gives measurements of certain portions of the remains discovered in this Province.

714 **Parker** (Richard A.). The iron ore region of Lake Superior.

Eng. Mag., vol. ii, pp. 152–175 and 285–303.

Describes the iron deposits of the Marquette, Menominee, Gogebic, Vermillion, and Mesabi ranges.

715 **Pavlow** (Alexis). On the marine beds closing the Jurassic and opening the Cretaceous, with the history of their fauna.

Geol. Soc. Am., Bull., vol. iii, pp. 61–64.

Describes the changes which took place in the development of belemnites and ammonites and the geologic epochs which they indicate.

716 **Peale** (Albert Charles). The Paleozoic section in the vicinity of Three Forks, Montana.

U. S. Geol. Surv., Bull. No. 110, pp. 9–45, pls. i–vi.

Describes the geologic structure of the region and the lithologic character and distribution of the Algonkian, Cambrian, Devonian, Carboniferous and eruptive rocks, illustrated by a colored geologic map of the region and vertical sections showing the character and thickness of the different subdivisions of the formations.

716*a* **Pearce** (Richard). [Origin of ore deposits.]

Colo. Sci. Soc., Proc., vol. iv, pp. 348–350.

In discussion of paper by P. H. van Diest on the "Evidence bearing on the formation of ore deposits by lateral secretion."

716*b* —— The eruptive dykes near Manchester, Mass.

Colo. Sci. Soc., Proc., vol. iv, pp. 365–366.

Describes an extremely basic dike rock cutting the granite in this locality.

716*c* **Pearce** (Stanley H.), **Penfield** (S. L.) and. On polybasite and tennantite from the Mollie Gibson mine, in Aspen, Colo.

See Penfield (S. L.) and Pearce (S. H.), 724.

717 **Pechin** (Edmund C.). Virginia Oriskany iron ores.

Eng. and Min. Jour., vol. liv, p. 150.

Includes description of the mining operations and the character and extent of the ore bodies.

718 —— [Magnetite ore samples in Rocky Mount section, Virginia, and their chemical analyses.]

Am. Inst. Min. Engrs., Trans., vol. xx, pp. 185–188.

In discussion of paper by H. B. C. Nitze, "Notes on some of the magnetites of southwestern Virginia and the contiguous territory of North Carolina."

719 **Penfield** (S. L.). Contributions to mineralogy by F. A. Genth. With crytallographic notes.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 184–189.

Crystallographic notes on hubnerite, bismutite, and natrolite.

720 —— Contributions to mineralogy, No. 54, by F. A. Genth. With crystallographic notes.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 381–389.

Describes aguilarite, metacinnabarite lollingite, rutile, quartz, danalite, yttrium-calcium fluoride, lepidolite, and fuchite.

721 **Penfield** (S. L.). On cookeite from Paris and Hebron, Me.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 393-396.

Abstract: Am. Nat., vol. xxvii, pp. 901-902 (½ p.).

Describes the mineralogic characters and gives the chemical composition of specimens from these two localities.

722 —— Mineralogical notes.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 396-399.

Describes the mineralogic characters and chemical composition of zunyite and the mineralogic character of xenotime, from Colorado.

723 —— On pentlandite from Sudbury, Ontario, Canada, with remarks upon three supposed new species from the same region.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 493-497.

Abstract: Am. Nat., vol. xxvii, p. 902 (½ p.).

Describes the mineralogic characters of pentlandite and of the supposed new sulphides of iron and nickel, folgerite, blueite, and whartonite, all from the Sudbury district.

724 —— and **Pearce** (S. H.). On polybasite and tennantite from the Mollie Gibson mine in Aspen, Colo.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 15-18.

Abstract: Am. Nat., vol. xxvii, p. 43 (½ p.).

724*a* —— **Wells** (H. L.) and. On herderite from Hebron, Me.

See Wells (H. L.) and Penfield (S. L.), 1018.

725 **Penhallow** (D. P.). A preliminary examination of so-called cannel coal from the Kootenai of British Columbia.

Am. Geol., vol. x, pp. 331-339.

The specimens were made up of rod-like bodies which, in their interior, show tubular and branching openings strongly suggestive of vegetable growth.

726 —— A new species of Larix from the interglacial of Manitoba.

Am. Geol., vol. ix, pp. 368-371.

Locates and describes two specimens of Larix.

726*a* —— **Dawson** (J. W.) and. Parka decipiens.

See Dawson (J. W.) and Penhallow (D. P.), 242.

727 **Penrose** (R. A. F., jr.). A Pleistocene manganese deposit near Golconda, Nevada.

Jour. of Geol., vol. i, pp. 275-282.

Discusses the character of the ore and of the beds in which it occurs and the relations of the ore body to the country rock. Considers that the manganese was locally precipitated from spring waters.

728 —— The chemical relation of iron and manganese in sedimentary rocks.

Jour. of Geol., vol. i, pp. 356-370.

Describes the geologic occurrence of iron and manganese, the processes of their transportation and deposition, and the methods by which they are precipitated from surface waters, and discusses the causes of the association and separation of iron and manganese.

729 **Penrose** (R. A. F., jr.). The Tertiary iron ores of Arkansas and Texas.

Geol. Soc. Am., Bull., vol. iii, pp. 44–50.

The ores are limonites or allied forms, occupy a belt 300 miles long and 1 to 50 wide, and are found in Eocene beds as nodular or laminated ores. The deposition was originally contemporaneous with that of the associated strata, and the ores have been subsequently segregated. Discusses the origin of the ores.

730 —— The iron deposits of Arkansas.

Ark. Geol. Surv., Ann. Rept., 1892, vol. i, pp. 1–153.

Abstract: Am. Geol., vol. x, pp. 324–325.

Gives a historical sketch of iron mining and its geologic investigations in Arkansas. Describes the general distribution of the iron deposits of the State, their geologic relations and their character and commercial value. Describes the ore bodies in the different localities of the several counties and discusses their geologic relations and origin.

731 —— Manganese, its uses, ores, and deposits.

Ark. Geol. Surv., Rept. for 1890, vol. i, pp. 642.

Abstracts: Can. Rec. Sci., vol. v, pp. 65–68; North of Eng. Inst. Min. and Mech. Engrs., Trans., vol. xlii, pp. 427–428 (½ p.).

Noticed in Record for 1891.

732 **Perrine** (Charles D.). Earthquakes in California in 1892.

U. S. Geol. Surv., Bull. No. 112, pp. 7–57, figs. 1–5.

Describes the instruments and methods employed in the work, gives a list of stations and a chronologic record of earthquakes occurring in California in 1892.

733 —— Earthquakes in California in 1893.

U. S. Geol. Surv., Bull. No. 114, pp. 9–23.

Includes a description of instruments and methods used, list of stations, and record of observations of earthquakes in California during 1893.

734 **Perry** (Stuart H.). A classification of topographic forms.

Am. Geol., vol. xii, pp. 153–159.

Discusses the general features of constructive and destructive forces in their relation to topographic forms and gives in tabular form the classification proposed.

735 **Phelps** (Frank B.). The copper region of Michigan.

Eng. Mag., vol. iv, pp. 47–63.

Abstract: North of Eng. Inst. Min. and Mech. Engrs., Trans., vol. xlii, p. 423 (½ p.).

Gives a brief sketch of the geology of the region and an account of the mining operations.

736 **Phillips** (William B.). A preliminary report on a part of the lower gold belt of Alabama, in the counties of Chilton, Coosa, and Tallapoosa.

Ala. Geol. Surv., Bull. No. 3, pp. 13–97.

Includes a general description of the Alabama gold fields, a history of some of the mining operations in the counties named, and an account of the character, value, and extent of the gold ores.

737 **Phillips** (William B.). Murphree's Valley and its minerals.
Eng. and Min. Jour., vol. lvi, pp. 448-449.
Gives a brief description of the geology of the region and two cross-sections.

738 —— A list of minerals containing at least 1 per cent of phosphoric acid.
Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 188-196.
Discusses the effect of phosphorus on iron and steel and gives a list of minerals containing phosphoric acid, showing their composition, the per cent of phosphoric acid, and the system under which the mineral crystallizes.

739 **Phinney** (Arthur John). The natural gas field of Indiana.
U. S. Geol. Surv., 11th Ann. Rept., part i, pp. 589-742.
Describes the character and structure of the formations and the extent of the gas field and gives an account of the well borings in the various counties.

740 **Pirsson** (L. V.). Datolite from Loughboro, Ontario.
Am. Jour. Sci., 3d ser., vol. xlv, pp. 100-102.
Abstract: Am. Nat., vol. xxvii, pp. 1091-1092 (½ p.).
Describes the crystallographic characters of crystals from the Lacy mine in Ontario.

741 —— On the geology and petrography of Conanicut Island, Rhode Island.
Am. Jour. Sci., 3d ser., vol. xlvi, pp. 363-378.
Describes the Carboniferous conglomerates, sandstones, and shales, and the dikes which cut them. Describes the petrographic characters of the granite, minette, and phyllite, and the character of the contact metamorphic rocks.

742 **Plummer** (Fred G.). A diagonal moraine.
Am. Geol., vol. xii, pp. 231-232.
Describes a diagonal moraine occurring on Mount St. Helena, Washington.

743 **Powell** (J. W.). Report of the Director of the United States Geological Survey.
U. S. Geol. Surv., 11th Ann. Rept., part i, pp. 1-30.
Includes an account of the progress of geologic, paleontologic, and related work undertaken by the Survey during the year 1889-99.

744 —— Report of the Director of the United States Geological Survey.
U. S. Geol. Surv., 12th Ann. Rept., part i, pp. 1-19.
Gives an account of the progress of Survey work during the year 1890-91.

745 —— Report of the Director of the United States Geological Survey.
U. S. Geol. Surv., 13th Ann. Rept., pp. 3-240.
Contains a summary of the work of the Survey during the fiscal year 1891-92 and includes reports of the heads of different divisions.

746 **Powell** (S. L.). Notes on minerals recently obtained from the quarries of Jones Falls. [Maryland.]
Johns Hopkins Univ. Circ., vol. xii, No. 103, pp. 49-50.
Describes the mineralogic characters of calcite, beaumontite, and three varieties of feldspar occurring in a pegmatite vein in a quarry near Baltimore.

747 **Pratt** (N. A.). Florida phosphates: the origin of the bowlder phosphates of the Withlacoochee River district.

Eng. and Min. Jour., vol. liii, p. 380.

Describes the phosphate beds of this district and discusses the question of their origin.

748 **Preston** (E. B.). Amador County [California].

Cal. State Min. Bur., 11th Rept., pp. 139–146.

Includes notes on some of the mines of the county.

749 —— Butte County [California].

Cal. State Min. Bur., 11th Rept., pp. 150–165.

Contains notes on the mining operations and on the character of the ore in this county.

750 —— Calaveras County [California].

Cal. State Min. Bur., 11th Rept., pp. 167–178.

Contains notes on the occurrence of copper in the metamorphic slates west of the Gold Belt and on the gold mines.

751 —— Eldorado County [California].

Cal. State Min. Bur., 11th Rept., pp. 200–207.

Notes on the mineral deposits of the county.

752 —— North Fork mining district of Fresno County [California].

Cal. State Min. Bur., 11th Rept., pp. 218–223.

Describes the topography of the region, with notes on some of the mines.

753 —— Lassen County [California].

Cal. State Min. Bur., 11th Report, pp. 241–242.

Notes on the Hayden Hill mining district, with sketch map of the district.

754 —— Monterey County [California].

Cal. State Min. Bur., 11th Rept., pp. 259–262.

Notes on some gold mines.

755 —— Plumas County [California].

Cal. State Min. Bur., 11th Rept., pp. 323–333.

Notes on some of the gold mines.

756 —— San Benito County [California].

Cal. State Min. Bur., 11th Rept., pp. 370–373.

Describes briefly the geology of a portion of the Gabilan and Mount Diablo ranges.

757 —— Salton Lake [California].

Cal. State Min. Bur., 11th Rept., pp. 387–393.

Describes the depression occupied by the lake and gives a chemical analysis of the salt from the salt marsh.

758 —— Sierra County [California].

Cal. State Min. Bur., 11th Rept., pp. 400–412.

Gives the altitude of some of the peaks in this county and notes on some of the gold mines.

759 —— Tuolumne County [California].

Cal. State Min. Bur., 11th Rept., pp. 493–513.

Describes briefly the geology of the county, with remarks on the occurrence of copper on the west side of the Mother Lode and notes on the gold mines.

759a **Procter** (John R.). Progress of the Kentucky Geological Survey.
Abstract: Am. Jour. Sci., 3d ser., vol. xliv, p. 78 (½ p.).

760 **Prosser** (Charles S.). The geological age of the rocks of the novaculite area [Arkansas].
Ark. Geol. Surv., Ann. Rept., 1890, vol. iii, pp. 418-423.
Reviews the literature on the age of these rocks.

761 —— Notes on Lower Carboniferous plants from the Ouachita uplift.
Ark. Geol. Surv., Ann. Rept., 1890, vol. iii, pp. 423-424.
Brief description of localities and of the lithologic characters of the strata in which the plant remains were found.

762 —— The Devonian section of central New York along the Unadilla River.
N. Y. State Mus., 46th Ann. Rept., pp. 256-288.
Describes the lithologic character of the section and gives a list of fossils collected from different localities in this region.

763 —— The thickness of the Devonian and Silurian rocks of western New York, approximately along the line of the Genesee River.
Roch. Acad. Sci., Proc., vol. ii, pp. 49-104.
Abstract: Am. Geol., vol. x, p. 257 (½ p.).
Reviews previous publications regarding the geologic section in this part of the State. Gives sections displayed by different well borings, and concludes that 1,250 to 1,500 feet is a conservative estimate of the thickness at Rochester. Illustrated by map of the region showing location of wells.

764 —— The thickness of the Devonian and Silurian rocks of central New York.
Geol. Soc. Am., Bull., vol. iv, pp. 91-118.
Abstract: Am. Geol., vol. xi, pp. 411-412 (½ p.).
Gives the section shown by several deep wells from which is deduced a general geologic section of central New York.

765 —— The Devonian system of eastern Pennsylvania.
Am. Jour. Sci., 3d ser., vol. xliv, pp. 210-221.
Discusses the fossil evidence as to the age of certain deposits in this region and of their correlation with the Tully and Genesee formations in New York. Illustrated by cross-section.

766 —— The Upper Hamilton and Portage stages of central and eastern New York.
Am. Jour. Sci., 3d ser., vol. xlvi, pp. 212-230.
Gives a historical sketch of the use of the term "Oneonta group" and list of fossils found at various localities and statements concerning their stratigraphic position, from which the author concludes that the Oneonta sandstone is not the top of the Hamilton series, but belongs to the Portage.

767 **Pumpelly** (Raphael). An apparent time-break between the Eocene and Chattahoochee Miocene in southwestern Georgia.
Am. Jour. Sci., 3d ser., vol. xlvi, pp. 445-447.
Describes the topographic features of the region and gives a list of fossils found in the Eocene and Chipola Miocene. Explains briefly the evidence indicating the existence of the time-break.

768 **Pumpelly** (Raphael) and **Van Hise** (C. R.). Observations upon the structural relations of the Upper Huronian, Lower Huronian, and Basement Complex on the north shore of Lake Huron.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 224-232.

Discusses the relations of the formations at various points in the region and concludes that the pre-Keweenawan rocks on the north shore of Lake Huron are separable by unconformities into three series similar to those on the south shore of Lake Superior and Steep Rock Lake, and that the unconformities are alike in the three districts and the formations once extended over the entire area.

R.

769 **Rand** (Theodore D.). Geology of the Isles of Shoals.

Phila. Acad. Nat. Sci., Proc., 1892, part iii, pp. 324-325.

Describes the gneissoid rocks of which the islands are formed and the trap dikes which cut them.

770 —— The supposed South Chester Valley Hill fault.

Phila. Acad. Nat. Sci., Proc., 1892, part iii, pp. 445-447.

Quotes descriptions of the region from the Final Report of the Second Geological Survey of Pennsylvania and discusses some of the statements quoted.

771 —— **Jefferis** (W. W.), and **Cardeza** (J. T. M.). Mineral localities of Philadelphia and vicinity.

Phila. Acad. Nat. Sci., Proc., 1892, part ii, pp. 174-202.

Describes many rock exposures in the region and mentions the minerals found in them.

772 **Raymond** (R. W.). [Occurrence of titaniferous iron ore.]

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 274-277.

In discussion of paper by H. B. C. Nitze, "The magnetic iron ores of Ashe County, N. C."

773 —— [Vein structure.]

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 872-873.

In discussion of paper by Ernest Wiltsee, "Notes on the geology of the Half-Moon Mine, Pioche, Nev."

774 **Reade** (T. Mallard). Physics of mountain building: some fundamental conceptions.

Am. Geol., vol. ix, pp. 238-243.

Discusses the effect of simple expansion by increase of temperature in the production of lateral pressure in the earth's crust.

775 **Reese** (Charles L.). On the influence of swamp waters in the formation of the phosphate nodules of South Carolina.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 402-406.

Brief description of the phosphate deposits and a statement of the results of certain chemical experiments.

776 **Reid** (Harry Fielding). Studies of Muir glacier, Alaska.

Nat. Geog. Mag., vol. iv, pp. 19-55, pls. i-xiv.

Abstract: Am. Geol., vol. x, p. 326 (½ p.).

Gives a general sketch of the geography of the country. Describes the main features of the glacier and its tributaries, and recites the evidences which indicate its former extension and recent diminution. Gives the results of measurements of the motion of the ice and the general features of its erosion.

777 **Reyer** (E.). On the causes of the deformation of the earth's crust.
Sci. Amer. Suppl., vol. xxxiv, pp. 13874-13875.
Discusses the effect of sedimentation and loading in producing deformation, illustrated by sketches of certain experiments.

778 **Rickard** (T. A.). The persistence of ores in lodes in depth.
Eng. and Min. Jour., vol. lv, pp. 51-52.
Remarks on the evidence of certain mines which indicate that the lodes becomes poorer when a considerable depth has been attained.

778*a* —— Certain dissimilar occurrences of gold-bearing quartz.
Colo. Sci. Soc., Proc., vol. iv, pp. 323-331 and 336-339.
Describes gold-bearing quartz veins of Australia, New Zealand, and California.

778*b* —— [Origin of ore deposits].
Colo. Sci. Soc., Proc., vol. iv, pp. 350-351.
In discussion of paper by P. H. van Diest on the "Evidence bearing on the formation of ore deposits by lateral secretion."

779 **Ricketts** (L. D.). Faulting in veins.
Eng. and Min. Jour., vol. liii, pp. 565-566.
Reviews the previous articles on this subject and discusses the characteristics of fault phenomena.

780 **Ries** (Heinrich). Notes on the clays of New York State and their economic value.
N. Y. Acad. Sci., Trans., vol. xii, pp. 40-47.
Describes the clays of Quaternary, Tertiary, and Cretaceous age occurring in various portions of the State.

781 —— List and bibliography of minerals occurring in Warwick Township, N. Y.
N. Y. Acad. Sci., Annals, vol. vii, pp. 651-654.

782 **Robertson** (James D.). Notes on the formation of the iron ores.
Science, vol. xxi, p. 131.
Describes an occurrence of specular hematite in Missouri and the evidences which indicate the replacement of limestone by iron from percolating waters.

783 **Rogers** (G. O.). Drift mounds near Olympia, Washington.
Am. Geol., vol. xi, pp. 393-399.
Describes some peculiar mounds occurring in this vicinity, reviews Professor Le Conte's theory as to their origin, and suggests that they are due to certain glacial phenomena.

784 **Rominger** (C.). On the occurrence of typical Chætetes in the Devonian strata at the falls of the Ohio and likewise in the analagous beds of the Eifel of Germany.
Am. Geol., vol. x, pp. 56-63.
Defines the characters which distinguish Chætetes from certain other genera and describes some specimens from the two localities.

785 **Ross** (O. C. D.). The origin of petroleum.
Brit. Assoc. Adv. Sci., Report 1891, pp. 639-641.
Refers to the occurrence of gypsum as being an indication of oil-bearing strata and to the general condition of the petroleum industry in the United States.

786 **Rothpletz** (A.). On the formation of oolite.

Am. Geol., vol. x, pp. 279–282.

Abstract: Am. Nat., vol. xxvii, p. 34 (⅓ p.).

Describes Glæocapsa and Glæothece cells found on the shores of Great Salt Lake. Describes the calcareous oolites, and concludes that a majority of the marine Cretaceous oolites, with regular zonal and radial structure, are of plant origin.

787 —— On the Permian, Triassic, and Jurassic formations in the East Indian Archipelago (Timor and Rotti).

Geol. Soc. Am., Bull., vol. iii, pp. 14–15.

Paper read before the society and discussed by C. A. White and Lester F. Ward.

788 **Rowley** (R. R.). Range of Choteau fossils.

Am. Geol., vol. xii, pp. 49–50.

Exhibits in tabular form the range of the common species of Choteau fossils in the Carboniferous of Missouri.

789 —— The Hamilton beds of Callaway County, Mo.

Am. Geol., vol. xii, pp. 203–205 (correspondence).

Gives list of fossils found in these beds.

790 —— Description of some new species of crinoids, blastoids, and brachiopods from the Devonian and sub-Carboniferous rocks of Missouri.

Am. Geol., vol. xii, pp. 303–309.

Describes new species from the Hamilton beds and Burlington, Choteau, and Louisiana limestones of Missouri.

791 **Ruffner** (W. H.). Some recent mineral discoveries in the State of Washington.

Science, vol. xix, p. 58.

Describes the ore deposits of different districts in the State.

792 **Russell** (F. W.). Notes upon Nebraska Tertiary.

Am. Geol., vol. ix, pp. 178–181.

Describes certain beds belonging to the Tertiary and discusses the evidences which indicate that some of them should be assigned to the Miocene and others to the Pliocene.

793 **Russell** (Israel C.). Malaspina Glacier.

Jour. of Geol., vol. i, pp. 219–245.

Abstract: Am. Geol., vol. xii, pp. 121–122 (⅔ p.).

Describes the geographic features of the Mount St. Elias region, illustrated by map, and the glacial characters of the ice sheet. Mentions the occurrence of forests on the moraines and of marginal lakes. The drainage is englacial or subglacial, and subglacial deposition takes place which may be similar to the osars of other glaciated regions.

794 —— Geological history of the Laurentian basin.

Jour. of Geol., vol. i, pp. 394–408.

Describes the sub-morainal topography of the basin. Discusses the origin of the basin, the character of its sediments, the evidences of the existence of lake shores, the fossils found in the sedimentaries, and the effect of a retreat of the ice sheet.

795 **Russell** (Israel C.). Correlation papers. The Newark system.

U. S. Geol. Surv., Bull. No. 85, 344 pp., pls. i-xiii, figs. 1-4.

Abstracts: Jour. of Geol., vol. i, pp. 740-744; Am. Geol., vol. xii, p. 402 (½ p.); Am. Nat., vol. xxvii, pp. 987-988.

Includes an account of the geographic distribution of the Newark system and a description of its lithologic character and stratigraphy, of the life of the period, and of the dikes and sheets of igneous rocks which penetrate the Newark strata. Contains a description of the structure and origin of the Newark areas, a discussion of the principles of correlation, the relation of the Newark to other systems, and a bibliography and index.

796 —— Second expedition to Mount St. Elias in 1891.

U. S. Geol. Surv., 13th Ann. Rept., part ii, pp. 7-91, pls. iii-xxi, figs. 1-6.

Describes the topographic features of the region and the character of the glacial phenomena and deposits.

797 —— A geological reconnoissance in central Washington.

U. S. Geol. Surv., Bull. No. 108, pp. 11-108, pls. i-xii, figs. 1-8.

Describes the character of the crystalline rocks, the Kittitas system, Columbia lavas, John Day system, and the glacial deposits. Discusses the geologic structure of the region and gives a description of the region traversed, including portions of Yakima, Kittitas, Okanogan, and Douglas counties.

798 —— Origin of the gravel deposits beneath Muir Glacier, Alaska.

Am. Geol., vol. ix, pp. 190-197.

Describes certain bowlder and gravel deposits on the west side of Yakutat Bay and assumes that similar deposits beneath Muir Glacier, described by H. P. Cushing, have a like origin.

799 —— Climatic changes indicated by the glaciers of North America.

Am. Geol., vol. ix, pp. 322-336.

Gives an account of the distribution of existing glaciers in North America and the evidences which indicate that they are now retreating. Concludes that the growth of glaciers and the initiation and decline of glacial epochs are the result of climatic changes so gradual as to require the lapse of centuries to become conspicuous.

800 —— Mount St. Elias and its glaciers.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 169-182.

Abstract: Am. Geol., vol. ix, pp. 340-341.

Gives an account of two expeditions to the region and describes the character of the country traversed. The prevailing structure is monoclinal and similar to the Great Basin type. Describes the glacial phenomena and states that the present ice drainage is consequent on the orographic structure.

S.

801 **Safford** (James M.). Notes on the Middleton formation of Tennessee, Mississippi, and Alabama.

Geol. Soc. Am., Bull., vol. iii, pp. 511-512.

Abstract: Am. Geol., vol. xi, p. 119 (6 l.).

Describes the characters of the formations in these States which form the lowest Eocene.

802 —— The pelvis of a Megalonyx and other bones from Big Bone Cave, Tennessee.

Geol. Soc. Am., Bull., vol. iii, pp. 121-123.

Describes the pelvis and other bones found in this cave and its location and history.

803 **Safford** (James M.). Exhibition of certain bones of Megalonyx not before known.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, p. 289 (⅛ p.)

804 —— The Tennessee Coal Measures.

U. S. Geol. Surv., Min. Res., 1892, pp. 497-506.

Describes the strata in which the Coal Measures occur and states that they form the uppermost beds of the Cumberland Plateau, covering an area of about 5,000 square miles.

805 **Sahlin** (Axel). The talc industry of the Gouverneur district, St. Lawrence County, N. Y.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 583-588.

Briefly describes the occurrence of veins of talc in this district.

806 **Salisbury** (Rollin D.). On the probable existence of a second driftless area in the basin of the Mississippi.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 251-253.

The area lies principally in Illinois, between the Mississippi and Illinois rivers. As the region is approached the topography loses the characteristics of glacial erosion and develops those of subaerial erosion.

807 —— A preliminary paper on drift or Pleistocene formations of New Jersey.

N. J. Geol. Surv., Report for 1891, pp. 35-108.

Gives a general description of the drift formations of the State and of the phenomena connected with their deposition. Describes the development and movements of the ice sheet in North America and the modifications produced on the pre-Glacial surface. Describes the deposits of till, the terminal moraines, and the extra-morainic glacial drift of New Jersey.

808 —— Certain extra-morainic drift phenomena of New Jersey.

Geol. Soc. Am., Bull., vol. iii, pp. 173-182.

Describes the deposits found in different localities which indicate that glaciation had extended beyond the limit heretofore assigned to it. It is suggested that the ice period may have been divided into three epochs, since the first advance has no frontal moraine, the second is limited by morainal ridges, and the third by terminal moraines of more pronounced character.

809 —— On the northward and eastward extension of the pre-Pleistocene gravels of the Mississippi basin.

Abstracts: Geol. Soc. Am., Bull., vol. iii, pp. 183-186.

Refers to previous publications by the author on the relationships of the Mississippi Valley gravels to the glacial drift and gives the results of recent observations. It is thought that the gravels are pre-Pleistocene and the gravels of the driftless area in Wisconsin and southeastern Minnesota are to be correlated with those of the Ohio and Mississippi basins.

810 —— Surface geology, Report of Progress, 1892 [New Jersey].

N. J. Geol. Surv., Report for 1892, pp. 37-166.

Abstract: Am. Geol., vol. xii, pp. 336-337.

Gives a general description of glacial deposits. Describes the till, extra-morainic till deposits, the terminal moraine, eskers, osars, kames, overwash plains and valley trains, Trenton gravels outside of Delaware Valley, glacial phenomena of glacial lake Passaic, wind drift and residuary products, and the yellow gravel in New Jersey.

811 **Salisbury** (Rollin D.). Distinct glacial epochs and the criteria for their recognition.

Jour. of Geol., vol. i, pp. 61-84.

Abstract: Am. Geol., vol. xi, pp. 171-172.

Defines the term "glacial epoch" and describes the phenomena which would indicate the existence of distinct glacial epochs.

812 —— The drift of the north German lowland.

Am. Geol., vol. ix, pp. 294-319.

Describes the differences of glacial phenomena of Germany and America and reviews the paper by Dr. F. Wahnschaffe on "The causes of the surface form of the north German lowland."

812*a* —— The Older drift in the Delaware valley.

Am. Geol., vol. xi, pp. 360-362 (correspondence).

Refers to article by A. A. Wright, on the same subject.

812*b* —— **Chamberlin** (T. C.) and. On the relationship of the Pleistocene to the pre-Pleistocene formations of the Mississippi basin south of the limit of glaciation.

See Chamberlin (T. C.) and Salisbury (R. D.), 132.

813 **Sapper** (Carl). Ueber die räumliche Anordnung der mexikanischen Vulkane.

Zeit. Deut. Geol. Gesell., Band xlv, Heft 4, 1893, pp. 574-577.

Describes the general arrangement and the structure and character of the materials of the volcanoes of Mexico.

814 —— Bemerkungen uber die räumliche Vertheilung und morphologischen Eigenthümlichkeiten der Vulcane Guatemalas.

Zeit. Deut. Geol. Gesell., Band xlv, Heft 1, 1893, pp. 54-62.

Describes the general character of volcanic activity in Guatemala and the arrangement and geographic distribution of the volcanoes. Considers they were formed by volcanic material coming up through fissures, the volcanoes varying in size according to the size of the fissure, and that their present form is due to the action of winds and hurricanes in carrying away the loose materials.

814*a* **Sardeson** (F. W.), **Hall** (C. W.) and. Paleozoic formations of southeastern Minnesota.

See Hall (C. W.) and Sardeson (F. W.), 377.

815 **Schuchert** (Charles). On the development of the skull of Zygospira recurvirostra.

Wash. Biol. Soc., Proc., vol. viii, pp. 79-82, pl. xi.

Describes specimens obtained from Minnesota from a horizon equivalent to the Trenton of New York and gives a statement of observations and correlations.

816 —— A classification of the Brachiopoda.

Am. Geol., vol. xi, pp. 141-167.

Reviews the classifications of Brachiopoda adopted by previous writers. Gives the author's classification and a table showing the geologic distribution of Brachiopoda.

816*a* —— **Beecher** (C. E.) and. Development of the brachial supports in Dielasma and Zygospira.

See Beecher (C. E.) and Schuchert (C.), 64.

816*b* **Schuchert** (Charles), **Winchell** (N. H.) and. Preliminary description of new Brachiopoda from the Trenton and Hudson River groups of Minnesota.

See Winchell (N. H.) and Schuchert (C.), 1081.

816*c* **Schwarz** (T. E.) [Independence mine, Cripple Creek, Colorado.]

Colo. Sci. Soc., Proc., vol. iv. p. 422.

Brief note on the occurrence of gold ores in this mine.

817 **Schweitzer** (Paul). A report on the mineral waters of Missouri.

Mo. Geol. Surv., vol. iii, 1892, pp. 1–256, pls. i–xxxiii, figs. 1–11.

Abstract: Am. Geol., vol. xi, pp. 205–207.

Discusses the origin of mineral waters and their analysis, composition and therapeutics. Describes the occurrences of mineral waters or brines, and the alkaline, sulphatic, chalybeate, and sulphur waters. Compares European and Missouri waters. Appendix B contains analyses of waters from most of the counties. Appendix C comprises a bibliography of mineral waters.

818 **Scott** (W. B.). On the osteology of Mesohippus and Leptomeryx, with observations on the modes and factors of evolution in the Mammalia.

Abstracts: Am. Geol., vol. ix, pp. 402–404; Am. Jour. Sci., 3d ser., vol. xliv, p. 428.

819 —— A revision of the North American Creodonta, with notes on some genera which have been referred to that group.

Phila. Acad. Nat. Sci., Proc., 1892, part ii, pp. 291–320, and part iii, pp. 321–323.

Reviews the classifications that have been previously proposed and describes several species.

820 —— The mammals of the Deep River beds.

Am. Nat., vol. xxvii, pp. 659–662.

Gives list of fossils found in Deep River Valley, Montana, with brief description of some new species.

821 **Scudder** (Samuel Hubbard). Index to the known fossil insects of the world, including myriapods and arachnids.

Abstract: Am. Jour. Sci., 3d ser., vol. xliii, pp. 244–245 (8 l.).

822 —— The Tertiary Rhynchophora of North America.

Boston Acad. Nat. Hist., Proc., vol. xxv, pp. 370–386.

Abstract: Am. Nat., vol. xxvii, pp. 146–147.

Gives a general account of the Tertiary insects and in tabular form compares the recent and fossils Rhynchophora, the relative importance of the families, and the relative abundance of insects in western deposits. Describes some of the different families.

823 —— Tertiary Rhynchophorous Coleoptera of the United States.

U. S. Geol. Surv., Monograph XXI, pp. 1–175, pls. i-xii.

Discusses the general results of the author's study of fossil Rhynchophora. Describes the characters of different species and gives a table showing their abundance and geographic distribution.

824 —— Some insects of special interest from Florissant, Colo., and other points in the Tertiaries of Colorado and Utah.

U. S. Geol. Surv., Bull. No. 93, 25 pp., pls. i-iii.

Abstract: Am. Nat., vol. xxvii, pp. 558–559 (½ p.).

Includes description of insects of different orders.

825 **Scudder** (Samuel Hubbard). The American Tertiary Aphidæ.
U. S. Geol. Surv., 13th Ann. Rept., part ii, pp. 347-356, pls. cii-cvi.
Describes the general characters of American fossil plant lice and gives a list of them and a brief description of various species and the locality where found.

826 —— Insect fauna of the Rhode Island coal field.
U. S. Geol. Surv., Bull. No. 101, pp. 9-21, pls. i-ii.
Describes specimens from the Carboniferous of Rhode Island.

827 **Sears** (John H.). Geological and mineralogical notes, No. 5.
Essex Inst., Bull., vol. xxv, pp. 8-13.
Abstract: Am. Nat., vol. xxvi, p. 156 (¼ p.).
Describes some of the granitic, crystalline, and older sedimentary rocks of Essex County, Mass., and the microscopic structure of certain specimens.

828 —— On the occurrence of augite and nepheline syenites in Essex County, Mass.
Essex Inst., Bull., vol. xxv, pp. 111-125.
Describes the rock outcrops and the megascopic and microscopic characters of the syenites of the region.

829 **Selwyn** (Alfred R. C.). Summary report on the operations of the Geological Survey for the year 1890.
Can. Geol. Surv., Reports, vol. v, new series, 1890-91, part i, Report A, pp. 86.
Gives an account of observations on the gold-bearing rocks of Nova Scotia and of the Illecillewaet and Kootenai mining districts, and includes extracts from the reports of the assistant geologists.

830 —— Summary report on the operations of the Geological Survey for the year 1891.
Can. Geol. Surv., Reports, vol. v, new series, 1890-91, part ii, Report A, pp. 92.
Abstract: Am. Geol., vol. x, p. 182 (½ p.).
Includes an account of observations in Manitoba and Alberta and extracts from the reports of the geologic assistants.

831 —— Geological age of the Saganaga syenite.
Am. Jour. Sci., 3d ser., vol. xliii, pp. 319-322.
Refers to the paper by H. V. Winchell on the same subject. Discusses the use of the terms Huronian, Coutchiching, and Keewatin.

832 **Shaler** (Nathaniel Southgate). The origin and nature of soils.
U. S. Geol. Surv., 12th Ann. Rept., part i, pp. 219-345.
Abstract: Am. Jour. Sci., 3d ser., vol. xlv, pp. 163-164 (½ p.).
Discusses the nature and origin of soil and describes the processes of soil formation and certain peculiar soil conditions.

833 —— General account of the fresh-water morasses of the United States, with a description of the Dismal Swamp district of Virginia and North Carolina.
U. S. Geol. Surv., 10th Ann. Rept., pp. 255-339.
Abstract: Am. Geol., vol. ix, pp. 206-207.
Noticed in Record for 1891.

834 **Shaler** (Nathaniel Southgate). The geological history of harbors.

U. S. Geol. Surv., 13th Ann. Rept., part ii, pp. 99–209, pls. xxii–xlv, figs. 7–15.

Describes the general nature and origin of harbors, the effects of the forces at work upon them, and includes a description of the harbors on the Atlantic and Pacific coasts and on the Great Lakes of the United States.

835 —— The conditions of erosion beneath deep glaciers, based upon a study of the bowlder train from Iron Hill, Cumberland, R. I.

Harv. Mus. Comp. Zool., Bull., vol. xvi, No. 11, pp. 185–225, pls. i–iv, and map.

Abstracts: Am. Geol., vol. xii, pp. 191–192; Am. Nat., vol. xxvii, p. 662 (½ p.).

Describes the source of the bowlder train, its character and the rate of glacial erosion at this locality. Discusses the general characteristics of continental glaciation.

836 **Sherzer** (Will H.) A revision and monograph of the genus Chonophyllum.

Geol. Soc. Am., Bull., vol. iii, pp. 253–282.

Abstract: Am. Geol., vol. x, p. 66 (⅛ p.).

Describes the generic characters and gives a list of species of Chonophyllum. Its range is through Upper Silurian and the two lower divisions of the Devonian and reaching its maximum development in the Upper Helderberg.

837 **Shufeldt** (R. W.). A study of the fossil avifauna of the Silver Lake region, Oregon.

Phil. Acad. Nat. Sci., Jour., 2d ser., vol ix, pp. 389–425.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, p. 286 (12 l.).

Describes some new forms of fossil gulls found in this region.

837*a* **Singley** (J. A.). Report for 1891.

Texas Geol. Surv., 2d Rept. of Progress, 1891, pp. 78–82.

Gives the section as shown by a deep well at Galveston.

838 —— Preliminary report on the artesian wells of the Gulf coastal slope.

Texas Geol. Surv., 4th Ann. Rept., pp. 87–113.

Gives the section displayed by the Galveston deep well to a depth of 3,070 feet and the names of the fossils found in the various fossiliferous beds. Includes a description of the artesian wells of the coastal prairie region and Tertiary belt, with chemical analyses of some of the waters and sections of many of the wells.

839 **Small** (H. B.). The phosphate mines of Canada.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 774–782 and 1003.

Abstract: Eng. and Min. Jour., vol. lv, pp. 173–174.

Describes the apatite district in the Province of Quebec and the lithologic character of the rocks with which the apatite is associated.

840 **Smith** (Eugene A.). Underthrust folds and faults.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 305–306.

Describes the typical Appalachian fold and the structure of the underthrust fold or fault.

841 **Smith** (Eugene A.). Phosphates and marls of Alabama.

Ala. Geol. Surv., Bull. No. 2, pp. 9-82.

Abstract: Am. Nat., vol. xxvi, pp. 1026-1027.

Describes the characteristics of the subdivisions of the Cretaceous and Tertiary formations of the State and their contained phosphate deposits and calcareous marls. Gives a statement of the quality of the Alabama materials and compares them with the New Jersey phosphatic marls.

842 —— Sketch of the geology of Alabama.

Roberts & Son, Birmingham, Ala., pp. 1-36.

Describes the characteristics of each of the geologic formations occurring in the State, which includes representatives of all formations from Archean to Recent, except the Permian, Triassic, and Jurassic. Gives an account of their geographic distribution and a description of their economic mineral constituents.

843 —— The Coal Measures of Alabama.

U. S. Geol. Surv., Min. Res., 1892, pp. 293-300.

Divides the coal fields into three districts. States that they were probably originally continuous, but have been disconnected by dynamic forces.

844 **Smith** (Hamilton L.). List of species and some notes upon them.

Minn. Geol. and Nat. Hist. Surv., 20th Ann. Rept., pp. 293-306.

Contains notice of the discovery of a peat deposit of Minnesota carrying fresh-water forms, which occurs between layers of bowlder clay, and contain a marine fauna. Gives a list of diatoms found in the peat, with notes on the species.

845 **Smith** (W. Hampton). Ancient glacial moraine and drift at the mouth of the Columbia River.

Sci. Amer. Suppl., vol. xxxvi, p. 14658.

Describes and illustrates by cross-sections the structure and character of a mass of glacial débris occurring beneath a series of sandstones and shales 800 to 900 feet in thickness.

846 **Smith** (W. H. C.). Report on the geology of Hunters Island and adjacent country.

Can. Geol. Surv., Reports, vol. v, new series, 1890-91, part i, Report G, 76 pp.

Reviews the work of previous years and gives a bibliography of the geologic literature pertaining to this field. Describes its physical and geologic features. The rocks are schists, quart-porphyries, and conglomerates, associated with altered volcanics and rocks of granitic and syenitic types, the latter exhibiting evidences of eruptive origin.

847 —— The Archean rocks west of Lake Superior.

Geol. Soc. Am., Bull., vol. iv., pp. 333-348.

Describes the character and relations of the Laurentian rocks and discusses the relation of the Coutchiching and Keewatin series to the Laurentian granites. Describes the character and extent of the Coutchiching, Keewatin, and Steep Rock series, with a brief description of the gold deposits and iron ores.

848 **Smock** (John C.). Annual report of State Geologist, 1892.

N. J. Geol. Surv., Report for 1892, pp. 3-30.

Gives an account of the work accomplished in ascertaining the character and extent of Pleistocene, Tertiary, and Cretaceous formations of New Jersey.

849 **Smyth** (C. H., jr.). Lake filling in the Adirondack region.

Am. Geol., vol. xi, pp. 85-90.

Describes the filling of several small lakes which were formed originally by the damming up of old drainage lines by glacial débris. Concludes that the obliteration of the lakes is due to sedimentation, and not to the cutting down of their outlets.

850 —— A geological reconnoissance in the vicinity of Gouverneur, N.Y.

N. Y. Acad. Sci., Trans., vol. xii, pp. 97-108.

Describes the topography and geologic features of the region. Discusses the relation of the limestone to gneiss and the effects of metamorphism.

851 —— Petrography of the gneisses of the town of Gouverneur, N. Y.

N. Y. Acad. Sci., Trans., vol. xii, pp. 203-217.

Describes the petrographic characters of the gneiss, granite, crystalline limestone, quartzite, pyroxene rocks and scapolite rocks of this region, mentioned in a previous article on "A geological reconnoissance in the vicinity of Gouverneur, N. Y."

852 —— A third occurrence of peridotite in central New York.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 322-327.

Description of the strata in which the peridotite occurs and of its mineralogic, chemical, and microscopic characteristics.

853 —— On the Clinton iron ore.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 487-496.

Abstract: Am. Geol., vol. x, pp. 122-124.

Describes the iron ore deposits occurring at Clinton, N. Y., and concludes that these deposits are not of secondary origin, but were deposited as hydrated peroxides of iron in partially inclosed basins of the Silurian sea.

854 —— Alnoite containing an uncommon variety of melilite.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 104-107.

Describes some thin sections of a dike rock from New York containing this mineral.

855 **Smyth** (Henry Lloyd). A contact between the Lower Huronian and the underlying granite in the Republic trough, near Republic, Mich.

Jour. of Geol., vol. i, pp. 268-274.

Describes the general relations and characteristics of the formations in this locality and the contact phenomena at the point where exposed.

856 **Snow** (Charles H.). Copper crystallizations at the Copper Glance and Potosi mines, Grant County, New Mexico.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 308-313.

Gives a sketch of the geologic structure of the Copper Glance and Potosi ore bodies, with a description of the occurrence of some copper crystalline forms. Illustrated by sketch of the specimens.

857 **Spencer** (J. W.). The Paleozoic group. The geology of ten counties of northwestern Georgia.

Ga. Geol. Surv., 1893, pp. 1-406.

Abstracts: Am. Geol., vol. xii, pp. 267-268; Am. Nat., vol. xxvii, p. 1078 (½ p.).

Describes the general characteristics of the Cambrian, Silurian, Devonian, and Carboniferous formations and the physical features of this region. Gives an account of the local geology of each of the ten counties and a description of the ore deposits of iron, manganese, aluminum, coal, and building stones.

858 **Spencer** (J. W.). The Iroquois shore north of the Adirondacks.

Geol. Soc. Am., Bull., vol. iii, pp. 488–491.

Abstract: Am. Geol., vol. xi, p. 58 (¼ p.).

Describes in detail the shore-line. Considers that the accumulations at the mouths of all old valleys are identical with the Iroquois beach.

859 —— Channels over divides not evidence per se of glacial lakes.

Geol. Soc. Am., Bull., vol. iii, pp. 491–492.

Abstract: Am. Geol., vol. xi, p. 58 (¼ p.).

Describes the valley of Black River, New York, and the character of the terraces, and considers that those on the south indicate the insufficiency of ice dams to account for such high level terraces. Discussed by G. K. Gilbert, I. C. Russell, and the author.

859*a* **Springer** (Frank), **Wachsmuth** (C.) and. Description of two new genera and eight species of camerate crinoids from the Niagara group.

See Wachsmuth (C.) and Springer (F.), 974.

860 **Stanley-Brown** (Joseph). Geology of the Pribilof Islands.

Geol. Soc. Am., Bull. vol. iii, pp. 496–500.

Abstract: Am. Geol., vol. xi, p. 57 (¼ p.).

The islands were formed by recent volcanic action, marked by three distinct stages, whose contacts can be distinctly recognized. Describes the general character of and changes caused by igneous action.

861 **Stanton** (Timothy W.). The Colorado formation and its invertebrate fauna.

U. S. Geol. Surv., Bull. No. 106, pp. 13–189, pls. i-xlv.

Describes the geographic distribution of the formation, its lithologic characters, and thickness at different localities, with lists of fossils collected. Compares its fauna with other Cretaceous faunas of North America and Europe, and describes the characters of different species, stating the locality where found and their geologic position.

862 —— The stratigraphic position of the Bear River formation

Am. Jour. Sci., 3d ser., vol. xliii, pp. 98–115.

Abstract: Am. Geol., vol. ix, pp. 266–267.

Gives detailed description of the geologic sections at Bear River City and vicinity, in western Wyoming, and shows that this formation, formerly considered to be of Laramie or later age, is intermediate between the Jurassic and Colorado Cretaceous and probably above the Dakota. Of its thirty species of molluscan remains none have been found in the true Laramie. Accompanied by map and four sections.

863 —— The faunas of the Shasta and Chico formations.

Geol. Soc. Am., Bull., vol. iv, pp. 245–256.

Abstract: Am. Geol., vol. xii, p. 120 (¼ p.).

Reviews the literature on the relations of these formations, gives a list of both faunas from northern California, and reviews the evidences correlating these beds with the Queen Charlotte series of British Columbia. Concludes that there is no faunal break in the Shasta-Chico series.

864 **Stefanescu** (Grégoire). On the existence of the Dinotherium in Roumania.

Geol. Soc. Am., Bull., vol. iii, pp. 81–83.

Mentions the occurrence of remains of large Mammalia in the Tertiary and Quaternary of this country. Describes and illustrates the beds in which fragments of Dinotherium were found and gives measurements of some of its parts.

865 **Steinmann** (Gustav). A geological map of South America.
Abstract: Geol. Soc. Am., Bull., vol. iii, pp. 13–14.
The paper was discussed by E. D. Cope, R. T. Hill, and C. A. White.

866 **Stevenson** (John J.). The Chemung and Catskill (Upper Devonian) on the eastern side of the Appalachian basin.
Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 219–247; Am. Geol., vol. ix, pp. 6–33.
Abstract: Am. Nat., vol. xxvi, p. 157 (½ p.).
Reviews the opinions of other writers concerning the geologic position of these beds and describes their structural characteristics. Concludes that the series from the Portage to the end of the Catskill forms one period, the Chemung, and should be considered as belonging to the Devonian.

867 —— On the use of the name "Catskill."
Am. Jour. Sci., 3d ser., vol. xlvi, pp. 330–337.
Discusses the applicability of the term "Catskill" to designate an important formation and describes the general relations and character of the strata to which it is applied.

868 —— Prof. I. C. White's "Stratigraphy of the bituminous coal fields of Pennsylvania, Ohio, and West Virginia."
Am. Geol., vol. ix, pp. 352–355.
Gives a general review of the paper by Professor White.

869 —— On the origin of the Pennsylvania anthracites.
Abstract: Jour. of Geol., vol. i, pp. 677–687.
Discusses the different theories advanced to account for the occurrence of anthracite and gives a brief statement concerning the author's hypothesis.

870 **Stevenson** (Robert). The persistence of ores in lodes in depth.
Eng. and Min. Jour., vol. lv, p. 148.
Remarks on some evidences of barrenness and pinching out of ore bodies in mines of California at depths of 30 to 60 feet and widening out again within 25 feet of the bottom of the shaft.

871 **Stoek** (H. H.). Notes on the iron ores of Danville, Pa., with a description of the long-wall method of mining used in working them.
Am. Inst. Min. Engrs., Trans., vol. xx, pp. 369–385.
Gives a brief geologic description of the region and reproduces a section made by H. D. Rogers. The ore is of two varieties, one occurring in limestones, the other in sandstones. Includes analyses of the ores and a history of the development of the mines and the mining methods employed.

872 **Stone** (George H.). The osar gravels of the coast of Maine.
Jour. of Geol., vol. i, pp. 246–254.
Abstracts: Am. Geol., vol. xii, p. 122 (½ p.); Am. Geol., vol. xii, pp. 200–203 (correspondence).
Describes the osars of the region and remarks on the decrease in size of the gravel masses toward the coast and the presence of subglacial streams as shown by the occurrence of glacial potholes, and discusses the origin of the subglacial tunnels.

873 **Stone** (George H.). An extinct glacier of the Salmon River Range.
Am. Geol., vol. xi, pp. 406-409.
Describes an extinct glacier occurring in the Salmon River Mountains of Idaho.

874 —— The Turkey Creek mining district, El Paso County, Colo.
Eng. and Min. Jour., vol. lvi, p. 262.
Describes the occurrence of sandstone in granite, with brief statement concerning the other rocks of the district.

875 —— The Las Animas glacier.
Jour. of Geol., vol. i, pp. 471-475.
Describes the deposits of this extinct glacier and its tributaries in the smaller valleys.

876 **Storms** (W. H.). Los Angeles County [California].
Cal. State Min. Bur., 11th Rept., pp. 243-248.
Notes on the character and manner of occurrence of the gold and silver ores in certain mines.

877 —— San Bernardino County [California].
Cal. State Min. Bur., 11th Rept., pp. 337-369.
Describes the geologic features and the structure and character of the ore deposits of the Calico mining district and other mining districts of the county.

878 —— San Diego County [California].
Cal. State Min. Bur., 11th Rept., pp. 376-387.
Notes on some of the gold mines.

879 **Streeruwitz** (W. H. von). Report for 1891.
Texas Geol. Surv., 2d Rept. of Progress, 1891, pp. 20-26.
Gives an account of the general and economic geology of the Carrizo and Sierra Diablo mountains.

880 —— Trans-Pecos Texas.
Texas Geol. Surv., 3d Ann. Rept., 1891, pp. 383-389.
Contains brief description of the Carboniferous and Cretaceous beds in this region and the indications of ore bodies in the Carrizo and Sierra Diablo mountains.

881 —— Trans-Pecos Texas.
Texas Geol. Surv., 4th Ann. Rept., pp. 141-175.
Describes the processes of subaerial erosion in this region and contains observations on the occurrence of silver and gold and on outcrops showing lead or copper. Describes the Cretaceous and Carboniferous strata and gives a measured section in the Sierra Diablo and Carrizo mountains and a list of fossils obtained.

882 —— On the precious and other valuable metals of Texas.
Texas Acad. Sci., Trans., vol. i, pp. 19-24.
Gives a brief description of the occurrence of gold, silver, and platinum and their distribution and that of iron in the several districts of Texas.

883 —— The non-metallic mineral resources of the State of Texas.
Texas Acad. Sci., Trans., vol. i, pp. 97-102.
Discusses the character of the brown and stone coals, fire clays, kaolin, salt deposits, and building stones of Texas.

884 **Stretch** (R. H.). The Monte Christo mining district, Washington.
Eng. and Min. Jour., vol. lv, p. 343.
Describes the topographic and geologic features of the region.

885 **Swezey** (G. D.). Evidence of two pre-morainic glacial movements.
Science, vol. xxi, p. 216.
Describes some glacial phenomena of Nebraska.

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886 **Taff** (J. A.). Report for 1891.
Texas Geol. Surv., 2d Rept. of Progress, 1891, pp. 70–77.
Describes the artesian water supply and mineral resources of central and southwest Texas.

887 —— Report on the Cretaceous area north of the Colorado River.
Texas Geol. Surv., 3d Ann. Rept., pp. 269–379.
Describes the geologic and petrographic features of the Cretaceous series and mentions some of the fossils found in them. Divides the report into two sections—the Bosque, which is the lowest of the Cretaceous in Texas, and the Lampasas-Williamson section, the latter comprising the whole Cretaceous in central Texas.

888 —— Report on the Cretaceous area north of the Colorado River.
Texas Geol. Surv., 4th Ann. Rept. pp. 241–354.
Continues the description of Cretaceous deposits contained in Third Annual Report for 1891. Discusses the artesian water problems and describes the soils and topographic features of the region. Accompanied by two maps showing the areal extent of the Cretaceous and the artesian water conditions.

889 —— [Reply to criticisms on Third Annual Report of the Geological Survey of Texas.]
Am. Geol., vol. xi, pp. 128–130 (correspondence).

890 **Talmage** (J. E.). A remarkable occurrence of selenite.
Science, vol. xxi, pp. 85–86.
Abstract: Am. Nat., vol. xxvii, p. 1091 (½ p.).
Describes an occurrence of gypsum in a cave in southern Utah. Contains illustrations of the crystals as they occur in place.

891 **Tarr** (Ralph S.). The Permian of Texas.
Am. Jour. Sci., 3d ser., vol. xliii, pp. 9–12.
Considers, from the lithologic character and fauna, that the Permian of western Texas was deposited in a shallow inclosed sea and separated from the Carboniferous, if at all, by a very slight time-break.

892 —— The central Massachusetts moraine.
Am. Jour. Sci., 3d ser., vol. xliii, pp. 141–145.
Describes the moraine as extending from Cape Ann nearly to the Connecticut River. The halt in the retreat of the ice was only of sufficient length to form a well-defined morainal band.

893 —— A hint with respect to the origin of terraces in glaciated regions.
Am. Jour. Sci., 3d ser., vol. xliv, pp. 59–61.
Describes the valley of the Colorado River in central Texas and states that the conditions here prevailing are practically similar to those at the time of the formation of the terraces of the Glacial epoch. Compares the Colorado River terraces with those of the Connecticut River.

894 **Tarr** (Ralph S.). The Glacial period.

Sci. Am., vol. lxviii, pp. 86 and 103.

Describes the glacial phenomena in North America and other countries and discusses the evidences indicating the length of time since the close of the Glacial period.

895 —— Extinct volcanoes in the United States.

Sci. Am. Suppl., vol. xxxvi, pp. 14657-14658.

Describes some extinct volcanoes found in the Sierra Nevada, Coast Ranges, and Appalachians.

896 —— The new physical geography.

Sci. Am. Suppl., vol. xxxvi, pp. 14975-14976.

Remarks on the interdependence of geography and geology and describes some processes of stream erosion.

897 —— The Cretaceous covering of the Texas Paleozoic.

Am. Geol., vol. ix, pp. 169-178.

Gives a general sketch of the geologic history of Texas from the Carboniferous to and including Cretaceous time, indicating that it was uninterruptedly a land area and toward the close of the period had become a base-leveled peneplain, over which the Cretaceous sea rapidly encroached.

898 —— The relation of secular decay of rocks to the formation of sediments.

Am. Geol., vol. x, pp. 25-44.

Describes the processes of secular disintegration of rocks, the formation and distribution of residual soils, and the forces which transport the products of rock decay and assist in rock formation.

899 —— Glacial erosion.

Am. Geol., vol. xii, pp. 147-152.

Describes the general characteristics of glacial erosion and discusses the possibility of estimating the rate of glacial erosion from a study of these features.

900 —— Notes on the physical geography of Texas.

Phila. Acad. Nat. Sci., Proc., 1893, part ii, pp. 313-347.

Describes the present topographic features and also those of the different geologic periods in various portions of the State, with a discussion of the base-leveling and changes in the drainage systems that have taken place.

901 —— Reconnoissance of the Guadalupe Mountains.

Texas Geol. Surv., Bull. No. 3, pp. 9-42.

Describes the Cretaceous, Permian and Carboniferous areas of central Texas, the topographic features of the Guadalupe Mountains, their stratigraphy and economic resources.

902 —— **Wolff** (J. E.) and. Acmite-trachyte from the Crazy Mountains, Montana.

See Wolff (J. E.) and Tarr (R. S.), 1093.

903 **Taylor** (F. B.). The highest old shore-line on Mackinac Island.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 210-218.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 260-261.

Discusses the evidences as to the altitude of the highest shore-line on this island and at other points in the region and suggests a provisional classification of the deserted beaches of the Great Lakes into two subdivisions, differing genetically and chronologically from each other.

903*a* **Texas Geological Survey.** Annual Report for 1891.

Abstracts: Am. Jour. Sci., 3d ser., vol. xliv, p. 427 (¼ p.); Am. Geol., vol. x, pp. 311-316.

903*b* **Texas Geological Survey.** Annual Report for 1892.

Abstract: Am. Jour. Sci., 3d ser., vol. xlvi, pp. 307-308.

904 **Thomas** (Benj. W.). Diatomaceæ of Minnesota interglacial peat.

Minn. Geol. and Nat. Hist. Surv., 20th Ann. Rept., pp. 290-293.

Contains a description of Diatomaceæ and their geologic and geographic distribution.

905 **Thompson** (Maurice). Drift beds of Indiana.

Ind. Dept. Geol. and Nat. Hist., 16th Rept., 1888, pp. 20-40.

Describes the modification of the drift since its deposition and discusses the theory of a "second glacial epoch." Describes the depth and structure of the drift deposits and their contained fossils and minerals.

906 —— The Wabash arch [Indiana].

Ind. Dept. Geol. and Nat. Hist., 16th Rept., 1888, pp. 41-53.

Gives an account of observations bearing on the formation and structure of the arch and considers that it was connected with a continental disturbance occurring about the close of the Niagara epoch.

907 —— Gold, silver, and precious stones [Indiana].

Ind. Dept. Geol. and Nat. Hist., 16th Rept., 1888, pp. 87-92.

Describes the characteristics and manner of occurrence of these metals and states that none of them are to be found in Indiana.

908 —— The formation of soils and other superficial deposits [Indiana].

Ind. Dept. Geol. and Nat. Hist., 16th Rept., 1888, pp. 93-97.

Describes the composition and mode of formation of the black prairie and some of the clay soils of the State.

909 —— Indiana building stones.

Ind. Dept. Geol. and Nat. Hist., 17th Rept., 1891, pp. 19-113.

Describes the sandstones and limestones of Silurian, Devonian, and Carboniferous ages in the State, with an account of the quarrying industry and a list of the quarries.

910 —— Geological and natural history report of Carroll County [Indiana].

Ind. Dept. Geol. and Nat. Hist., 17th Rept., 1891, pp. 171-191.

Describes the topographic features and soil characteristics and discusses the disturbance of the Niagara limestone in this county.

911 **Thompson** (R. A.). Report on the soils, water supply, and irrigation of the Colorado coal field [Texas].

Texas Geol. Surv., 4th Ann. Rept., pp. 449-481.

Describes the characters of the various soils, giving chemical analyses, water supply, and irrigation possibilities of the region.

912 **Thompson** (W. H.). Fossils and their value.

Ind. Dept. Geol. and Nat. Hist., 16th Rept., 1888, pp. 54-76.

Describes the nature and distribution of fossils, how to collect them, and the fossil beds of Indiana, and gives a list of fossils found at Crawfordsville, Ind., by Charles Beechler.

913 —— Outline sketch of the most valuable minerals of Indiana.

Ind. Dept. Geol. and Nat. Hist., 16th Rept., 1888, pp. 77-86.

Describes the deposits of kaolin, the building stones, coals, iron ores, and beds of lime and chalk.

914 **Thompson** (W. H.). Partial report of survey of the western division, including sketches of Pulaski and White counties, Indiana.

Ind. Dept. Geol. and Nat. Hist., 16th Rept., 1888, pp. 131-154.

Includes description of the structural features of the Silurian and Devonian formations and the planing accomplished by the ice sheet in this region.

915 **Tiffany** (A. S.). Ancient waterways.

Abstract: Geol. Soc. Am., Bull., vol. iv, pp. 10-11.

916 **Tilton** (J. L.). Strata between Ford and Winterset [Iowa].

Iowa Acad. Sci., Proc., vol. i, part iii, pp. 26-27.

Notes on the Coal Measures of this region in Iowa.

917 **Todd** (J. E.). Striation of rocks by river ice.

Am. Geol., vol. ix, pp. 396-400.

Iowa Acad. Sci., Proc., vol. i, part ii, pp. 19-20.

Describes occurrences of striation by river ice below the glaciated area and considers that planation and striation are sometimes the work of river ice armed with erratics.

918 —— Volcanic dust from Omaha, Nebr.

Am. Geol., vol. x, pp. 295-296.

Iowa Acad. Sci., Proc., vol. i, part ii, p. 16.

Describes the deposit and gives a vertical section of the bluff in which it outcrops.

919 —— The shore-lines of ancient glacial lakes.

Am. Geol., vol. x, pp. 298-302.

Iowa Acad. Sci., Proc., vol. i, part ii, pp. 17-19.

Discusses the causes of the obscurity of shore-lines of glacial lakes and gives the results of recent observations in the region of the Moreau and Big Cheyenne rivers.

920 —— Striæ and slickensides at Alton, Ill.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 254-255.

Describes the locality and states that the striæ seem to pass into slickensides and may be due to a force acting in a horizontal direction.

921 —— Further note on the Loup and Platte rivers.

Science, vol. xix, pp. 148-149.

Additional notes concerning the topography and drainage of these rivers.

922 —— The Quaternary geology.

Mo. Geol. Surv., Higginsville sheet, pp. 10-11.

Describes the deposits of the drift, loess, or upland loam, and the terraces and bottoms in the area of the Higginsville sheet.

923 —— Notes on the geology of northwestern Iowa.

Iowa Acad. Sci., Proc., vol. i, part ii, pp. 13-16.

Gives data bearing on the geology of the region obtained from well records.

924 **Topley** (W.). The geology of petroleum and natural gas.

Brit. Assoc. Adv. Sci., Report for 1891, pp. 637-639.

Refers to the oil and gas fields of the United States and describes the formations in which they occur.

925 **Turner** (H. W.). Glacial potholes in California.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 453–454.

Describes the potholes, and states that they were probably formed by the action of water in some way connected with the glacier that formerly filled the canyon.

926 —— The lavas of Mount Ingalls, California.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 455–459.

Describes the occurrence and characteristics of the four varieties of eruptive rocks found in this locality and gives two analyses of the basalt.

927 —— The coal deposits of California.

U. S. Geol. Surv., Min. Res., 1892, pp. 308–310.

The coal measures that have produced the largest quantity of coal belong to the Eocene formation. Coal also occurs along the foothills of the Sierra Nevada, in the Ione formation, which is considered to be of Miocene age.

928 —— Some recent contributions to the geology of California.

Am. Geol., vol. xi, pp. 307–324.

Reviews several papers which treat of the geology of portions of California.

929 **Tyrrell** (J. B.). Report on northwestern Manitoba, with portions of the adjacent districts of Assiniboia and Saskatchewan.

Can. Geol. Surv., Reports, vol. v, new series, 1890–91, part i, Report E, pp. 231.

Describes the physical features of the region, with statistics of temperature and precipitation. The formations represented comprise the Silurian, Devonian, Cretaceous, post-Tertiary, and Recent. Several sections are given and lists of fossils from many localities. Salt obtained from brine springs forms the chief economic product of geologic interest.

930 —— Deep well at Deloraine, Manitoba.

Am. Geol., vol. xi, pp, 332–342.

Gives the section displayed by the well to a depth of 1,943 feet and describes the lithologic character of the deposits penetrated and mentions the fossils found.

U.

931 **Udden** (J. A.). On a natural formation of pellets.

Am. Geol., vol. xi, pp. 268–271.

Describes the formation of round white pellets in a deposit of volcanic dust occurring in McPherson County, Kans.

932 **Uhler** (P. R.). Gay Head.

Science, vol. xx, pp. 176–177.

General description of the geology of this locality.

933 —— Observations on the Cretaceous at Gay Head.

Science, vol. xx, pp. 373–374.

Gives the results of observations in this locality.

934 **Ulke** (Titus). A new tin mineral in the Black Hills.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 240–241.

Describes the character of a new mineral which the author names cuprocassiterite.

935 **Ulke** (Titus). A contribution to the geology of the Dakota tin mines.

Eng. and Min. Jour., vol. liii, p. 547.

Includes brief description of the Archean rocks in which tin occurs, the mineral species found, and a discussion as to the origin of the tin-bearing granites.

936 —— The occurrence of tin ore at Kings Mountain, N. C., and near Vesuvius, Va.

U. S. Geol. Surv., Min. Res., 1893, pp. 178–182.

Describes the character of the country rock of the two localities and the manner of occurrence of the tin ore.

937 **Ulrich** (E. O.). New Lamellibranchiata.

Am. Geol., vol. x, pp. 96–104.

Describes one new genus and eight new species found in shaly strata equivalent to the Black River limestone, in Minnesota.

938 —— New Lower Silurian Ostracoda, No. 1.

Am. Geol., vol. x, pp. 263–270.

Describes some minute Paleozoic fossils which represent recognizable stages in the development of Leperditiidæ.

939 —— Two new Lower Silurian species of Lichas (subgenus Hoplolichas).

Am. Geol., vol. x, pp. 271–272.

Describes two new species from Minnesota.

940 —— New Lower Silurian Lamellibranchiata, chiefly from Minnesota rocks.

Minn. Geol. and Nat. Hist. Surv., 19th Ann. Rept., pp. 211–248.

Abstract: Am. Jour. Sci., 3d ser., vol. xliv, p. 79 (½ p.).

Names many forms of Lamellibranchiata found in the different horizons of the Lower Silurian, discusses their classification, and describes some of the forms.

940*a* **United States Geological Survey.** Tenth Annual Report.

Abstracts: Am. Jour. Sci., 3d ser., vol. xliii, pp. 155–156; Am. Geol., vol. ix, pp. 337–340.

940*b* —— Eleventh Annual Report.

Abstract: Am. Geol., vol. xii, pp. 259–260.

941 **Upham** (Warren). [Pleistocene climatic changes.]

Abstract: Am. Geol., vol. xii, pp. 228–229.

Paper read before the World's Congress of Geology.

942 —— Altitude as the cause of the Glacial period.

Science, vol. xxii, pp. 75–76.

Reviews some of the theories as to the cause of the Ice age and the evidences which indicate a high altitude as the cause of the climatic changes.

943 —— Estimates of geologic time.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 209–220; Sci. Am. Suppl., vol. xxxv, pp. 14403–14405.

Abstracts: Jour. of Geol., vol. i, pp. 203–204; Am. Geol., vol. xi, p. 413 (⅓ p.).

Reviews the estimates of earth age and the time ratios adopted by different writers and the evidences on which they are based.

944 **Upham** (Warren). Epeirogenic movements associated with glaciation.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 114–121.

Discusses the evidence of deep submarine valleys eroded in late Tertiary and Quaternary time and its bearing on the theory of epeirogenic movements as the cause of the Glacial epoch.

945 —— Conditions of accumulation of drumlins.

Am. Geol., vol. x, pp. 339–362.

Abstract: Am. Jour. Sci., 3d ser., vol. xlv, pp. 70–71.

Defines and describes the varieties of drumlins. Outlines their geographic distribution, and states that they are probably the accumulation from englacial drift. Discusses the question of the unity of the Glacial epoch.

946 —— Englacial drift.

Am. Geol., vol. xii, pp. 36–43.

Discusses the use and application of the term "englacial drift," the distinction between subglacial till and the ice-inclosed drift, and the evidence showing that the drift is carried only into the lower part of the ice sheet. Considers that englacial drift becomes superglacial by the superficial melting of the ice and not by the gradual movement of the ice currents from the bottom to the ice surface.

947 —— Eskers near Rochester, N. Y. A discussion of the structure and origin of the Pinnacle Hills.

Roch. Acad. Sci., Proc., vol. ii, pp. 181–200.

Describes the structure of the Pinnacle Hills and eskers in Pittsford and discusses their relationship to glacial movements and their probable origin.

948 —— Processes of mountain building and their relationship to the earth's contraction.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 274–279.

Classifies mountain building forces into: first, that of folding; second, that form of energy acting in a vertical direction which has produced the arched, domed, tilted, and erupted forms. Both appear to be due to the earth's contracting in cooling, and the latter is dependent on the former in the occasional relief of stress by folding along mountain ranges.

949 —— A classification of mountain ranges according to their structure, origin, and age.

Appalachia, vol. vi, pp. 191–207.

Abstracts: Am. Jour. Sci., 3d ser., vol. xliii, pp. 74–75 (¼ p.); Am. Geol., vol. ix, pp. 205–206.

Noticed in Record for 1891.

950 —— Submarine valleys on continental slopes.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xli, pp. 171–173.

Describes submarine valleys in different parts of the world and compares their depths with that of the adjoining ocean level.

951 —— Inequality of distribution of englacial drift.

Geol. Soc. Am., Bull., vol. iii, pp. 134–148.

Describes the deposition of englacial drift and the region in which abundant and scanty deposition occurred. Discusses the relationship of the englacial drift to the terminal moraines and the forms in which the former were laid down.

952 **Upham** (Warren). Relationship of the glacial lakes Warren, Algonquin, Iroquois, and Hudson-Champlain.

Abstracts: Geol. Soc. Am., Bull., vol. iii, pp. 484–487; Am. Geol., vol. xi, p. 59 (¼ p.).

Describes the character and extent of the lake basins mentioned and in a general way defines their shore-lines.

953 —— The Champlain submergence.

Abstracts: Geol. Soc. Am., Bull., vol. iii, pp. 508–511; Am. Geol., vol. xi, p. 119 (¾ p.).

Discusses the evidences of a submergence in Champlain time in eastern North America.

954 —— [Connecticut Valley glacier.]

Geol. Soc. Am., Bull., vol. iv, p. 6.

In discussion of paper by C. H. Hitchcock, "Studies of the Connecticut Valley glacier."

955 —— Comparison of Pleistocene and present ice sheets.

Geol. Soc. Am., Bull., vol. iv, pp. 191–204.

Abstract: Am. Geol., vol. xii, p. 119 (½ p.).

Describes the existing ice sheets and glaciers and discusses the character and extent of the Pleistocene ice sheets from a comparison with present ice sheets, the continuity of the Ice age and the probable synchronism of glaciation in North America and Europe.

956 —— [The occurrence of Yoldia arctica in bowlder-clay.]

Geol. Soc. Am., Bull., vol. iv, p. 370.

In discussion of paper by R. Chalmers, "Height of Bay of Fundy coast in the Glacial period relative to sea-level as evidenced by marine fossils in the bowlder-clay at St. John, New Brunswick."

957 —— Drumlins near Boston.

Appalachia, vol. vii, pp. 39–48.

Refers to the earlier descriptions of drumlins in this vicinity, gives a list of papers treating on the drumlins near Boston, and discusses the theories as to their origin.

958 —— A recent visit to Lake Itasca.

Minn. Acad. Nat. Sci., Bull., vol. iii, pp. 284–292.

Gives an account of some glacial phenomena in this region.

959 —— Recent fossils near Boston.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 201–209.

960 —— Recent fossils of the harbor and back bay, Boston.

Boston Soc. Nat. Hist., Proc., vol. xxv, pp. 305–316.

Gives a table of 25 species of recent fossils found near Boston, 14 of which are distinctly southern and indicate that the sea here during a recent period has been warmer than at present. Since the post-Glacial oscillations are found to extend over all the North Atlantic region, the climatic changes are probably due to conditions determined by geographic movements of elevation and subsidence, with their effect on oceanic circulation.

V.

961 **Van Hise** (Charles Richard). The iron ores of the Lake Superior region.

Wis. Acad. Sci. Arts and Letters, vol. viii, pp. 219–227.

Abstract: Am. Nat., vol. xxvi, pp. 938–939.

Describes the geologic relations of the two formations with which the ore deposits are associated and discusses the question of the genesis of the ores.

962 **Van Hise** (Charles Richard). Correlation papers, Archean and Algonkian.

U. S. Geol. Surv., Bull. No. 86, pp. 549, pls. i–xii.

Review: Jour. of Geol., vol. i, pp. 525–531.

Gives a description of the Archean and Algonkian sections in the United States and Canada, and reviews the literature concerning their classification and correlation. Includes a discussion on the succession of these formations, the principles of correlation, and references to the literature.

963 —— The relations of the Archean and the Algonkian in the Northwest.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, p. 260.

Reviews some opinions concerning the relations of the Archean and Algonkian. States that the upper series of the Huronian rests unconformably on the Archean and in the Marquette and Menominee districts the Lower Huronian rests unconformably on the Basement Complex.

964 —— The iron ores of the Marquette district of Michigan.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 116–132.

Abstract: Eng. and Min. Jour., vol. liv, p. 29.

Describes the manner of occurrence of the iron ores of this district, with incidental mention of those of the Menominee and Vermillion Lake districts. Concludes that the local concentration into workable bodies began in Upper Huronian time or later, and may be still going on; that the genesis of Upper and Lower Huronian ores is alike, and the principle of secondary concentration by downward percolating waters is generally applicable to Lake Superior deposits.

965 —— An historical sketch of the Lake Superior region to Cambrian time.

Jour. of Geol., vol. i, pp. 113–128.

Describes the lithologic characters of the Basement Complex, the Huronian, the Keweenawan and Lake Superior sandstone in this region, and the movements of elevation and subsidence that characterized each epoch. Accompanied by colored geologic map.

966 —— Summary of current pre-Cambrian North American literature.

Jour. of Geol., vol. i, pp. 304–314 and 532–541.

Reviews the current literature on the North American pre-Cambrian.

967 —— Some dynamic phenomena shown by the Baraboo quartzite ranges of central Wisconsin.

Jour. of Geol., vol. i, pp. 347–355.

Describes the dynamic phenomena and the changes which the quartzite has undergone in passing from a massive quartzite, showing little evidence of movement, to rocks that have been fractured and cleaved, and finally to a rock that is apparently a crystalline schist.

968 —— The Huronian volcanics south of Lake Superior.

Abstract: Geol. Soc. Am., Bull., vol. iv, pp. 435–436.

969 —— **Irving** (R. D.) and. Penokee iron-bearing series.

U. S. Geol. Surv., 10th Ann. Rept., pp. 341–507.

Abstract: Am. Geol., vol. ix, pp. 207–208.

Noticed in Record for 1891.

969*a* **Van Hise** (C. H.), **Irving** (R. D.) and. The iron-bearing series of Michigan and Wisconsin.

See Irving (R. D.) and Van Hise (C. R.), 489.

969*b* —— **Pumpelly** (R.) and. Observations upon the structural relations of the Upper Huronian, Lower Huronian, and Basement Complex on the north shore of Lake Huron.

See Pumpelly (R.) and Van Hise (C. R.), 768.

970 **Vogdes** (Anthony W.). On the North American species of the genus Agnostus.

Am. Geol., vol. ix, pp. 377-396.

Reviews the literature of the subject and describes many different species.

971 —— On the genus Amphyx, with descriptions of American species.

Am. Geol., vol. xi, pp. 99-109.

Gives a historical sketch of this genus, with plates and descriptions of American species.

972 —— On some new Sedalia trilobites.

St. Louis Acad. Sci., Trans., vol. v, pp. 615-618.

Describes a new species from the Sedalia limestone and discusses the classification of Sedalia Crustacea and the age of the limestone.

973 —— A classed and annotated bibliography of the Paleozoic Crustacea, 1698-1892.

Cal. Acad. Sci., Occasional Papers iv, pp. 1-412.

Contains a bibliography of Paleozoic Crustacea and a catalogue of North American species.

W.

974 **Wachsmuth** (Charles) and **Springer** (F.) Description of two new genera and eight species of camerate crinoids from the Niagara group.

Am. Geol., vol., x, pp. 135-144.

Describes the different species and gives their horizon and locality.

975 **Wadsworth** (M. E.). Subdivisions of the Azoic Archean in northern Michigan.

Science, vol. xx, p. 355; Am. Jour. Sci., 3d ser., vol. xlv, pp. 72-73 (½ p.) (correspondence).

Gives the subdivisions in tabular form.

976 **Wahnschaffe** (Felix). Mittheilungen über das Glacialgebiet Nordamerikas. I. Die Endmoränen von Wisconsin und Pennsylvania.

Zeit. Deut. Geol. Gesell., Band xliv, Heft 1, pp. 107-122.

Describes the drift and terminal moraines in Wisconsin and Pennsylvania. Considers the terminal moraine does not mark the southern limit of glaciation. Compares the terminal moraines of Europe and North America.

977 **Walcott** (Charles Doolittle). Note on Lower Cambrian fossils from Cohasset, Mass.

Wash. Biol. Soc., Proc., vol. vii, p. 155.

Mentions two Cambrian fossils found at Cohasset which are identical with species found in Newfoundland.

978 **Walcott** (Charles Doolittle). Notes on the Cambrian rocks of Virginia and the southern Appalachians.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 52–57.

Describes localities in the southern Appalachian region in which Cambrian fossils have been found and compares the strata with those at different points in the northern United States and in Canada.

979 —— Notes on the Cambrian rocks of Pennsylvania and Maryland, from the Susquehanna to the Potomac.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 469–482.

Describes the formations of the region and gives two vertical sections, with list of fossils found in each bed. Reviews the opinions of other writers on the structure of the Blue Ridge. Considers the Balcony Falls section the key to the succession of sedimentary strata of Maryland and Pennsylvania, and that the "great thicknesses" which are said to occur in South Mountain are the result of foldings and overthrust faultings of the Cambrian and pre-Cambrian strata.

980 —— Preliminary notes on the discovery of a vertebrate fauna in Silurian (Ordovician) strata.

Geol. Soc. Am., Bull., vol. iii, pp. 153–167, 3 pls.; discussion, pp. 168–171.

Abstract: Am. Nat., vol. xxvii, pp. 268–269 (½ p.).

Describes the locality, near Canyon City, Colo., in which the fossils were found, gives the vertical section, and names the fossils found in the different beds. The vertical range of the fossils is 75 or 80 feet of the Harding quarry section, which extends horizontally 8 miles. The evidence of the existence of vertebrates is confined to plates and scales of ganoid fishes and a chordal sheath of a fish allied to Chimæra.

981 —— Systematic list of fossils found at Eureka, Nev.

U. S. Geol. Surv., Monograph XX, Appendix A, pp. 319–333.

Includes a list of fossils of each geologic horizon represented in this district.

982 —— The North American continent during Cambrian time.

U. S. Geol. Surv., 12th Ann. Rept., part i, pp. 529–568, pls. xlii-xlv.

Abstracts: Am. Nat., vol. xxvii, pp. 734–735; Am. Jour. Sci., 3d ser., vol. xlv, p. 163 (6 l.).

Describes the character and extent of Cambrian sediments. Gives a description of the geographic distribution of pre-Cambrian land, and discusses the continental features and the relations of land and sea during middle- and post-Cambrian times.

983 —— Correlation Papers. Cambrian.

U. S. Geol. Surv., Bull. No. 81.

Abstract: Am. Geol., vol. ix, pp. 203–205; Am. Jour. Sci., 3d ser., vol. xliii, p. 244 (½ p.).

Noticed in Record for 1891.

984 —— The Natural Bridge of Virginia.

Nat. Geog. Mag., vol. v, pp. 59–62.

Gives a diagrammatic section of the rocks cut by the canyon and describes the geologic formation and structure at this locality.

985 —— The geologist at Blue Mountain, Maryland.

Nat. Geog. Mag., vol. v, pp. 84–88; Sci. Amer. Suppl., vol. xxxvi, pp. 14753–14754.

Describes the geologic formations and their structure in this region. Gives a general sketch of the geologic history of the Blue Ridge.

986 **Walcott** (Charles Doolittle). Geologic time as indicated by the sedimentary rocks of North America.

Jour. of Geol., vol. i, pp. 639-676; Am. Geol., vol. xii, pp. 343-368.

Gives the estimates of different authors of the duration of geologic time. Describes the continental growth during the various geologic ages, the geographic conditions limiting the extent of Paleozoic sediments in the Cordilleras, the source and character of the material, and the conditions under which they were accumulated, with a discussion of the various processes of deposition and an estimate of the length of Paleozoic time in this region. Gives the ratios of the geologic periods adopted by other writers and presents the author's summary of the duration of each geologic period.

987 **Walther** (Johannes). The North American deserts.

Nat. Geog. Mag., vol. iv, pp. 163-176.

Describes the "Bad Lands" of Dakota, the region about Great Salt Lake and that of the Mohave Desert, and compares them with the deserts of northern Africa. Discusses the causes of erosion in the canyon of the Colorado.

988 —— A comparison of the deserts of North America with those of North Africa and northern India.

Science, vol. xix, p. 158.

Gives an abstract of paper read before the Geographical Society of Berlin.

989 **Wanner** (A.). Fossil tracks in the Trias of York County, Pa.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xl, p. 286 (5 l.).

990 **Ward** (Lester F.). Principles and methods of geologic correlation by means of fossil plants.

Am. Geol., vol. ix, pp. 34-47.

Abstracts: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 288-289; Am. Nat., vol. xxvi, p. 243 (½ p.).

Discusses the theory of homotaxis and gives the principles and methods which should govern the study of paleobotany as an aid to geologic correlation.

991 —— The plant-bearing deposits of the American Trias.

Geol. Soc. Am., Bull., vol. iii, pp. 23-31.

Abstracts: Am. Assoc. Adv. Sci., Proc., vol. xl, pp. 286-288; Am. Jour. Sci., 3d ser., vol. xliii, p. 157 (½ p.).

Discusses the relations of the Trias beds with those which preceded and followed them. Divides the plant-bearing Trias into five geographic areas and in tabular form shows the number of species common to each area.

992 **Ward** (R. DeC.). Another river pirate.

Science, vol. xix, pp. 7-9.

Describes the process of uplift and erosion by which one stream has captured another in northeastern Pennsylvania.

993 **Ward** (Thomas). The salt deposits of the United States of America and Canada.

Manchester Geol. Soc., Trans., vol. xx, pp. 471-495.

Describes the salt beds in the States of New York, Michigan, and Kansas, and those of Canada.

994 **Warman** (Philip Creveling). Bibliography and index of the publications of the United States Gelogical Survey, with laws governing their printing and distribution.

U. S. Geol. Surv., Bull. No. 100, pp. 9-494.

Gives the title and table of contents of each publication of the Survey, the laws governing their printing and distribution, and an index.

995 **Watts** (W. L.). Alameda County [California].

Cal. State Min. Bur., 11th Rept., pp. 121-138.

Contains notes on an occurrence of manganese, quicksilver, building stones, and artesian wells.

996 —— Coal and clays in Amador County [California].

Cal. State Min. Bur., 11th Rept., pp. 146-149.

Notes on the occurrence of coal and clays in this county.

997 —— Colusa County [California].

Cal. State Min. Bur., 11th Rept., pp. 179-188.

Notes on the water supply, salt springs, quicksilver, gold, sulphur, and coal mines of the county.

998 —— Contra Costa County [California].

Cal. State Min. Bur., 11th Rept., pp. 189-194.

Notes on coal mines of Mount Diablo.

999 —— Del Norte County [California].

Cal. State Min. Bur., 11th Rept., pp. 195-199.

Includes brief notes on the placer, copper, and coal mines and building stones.

1000 —— Fresno County [California].

Cal. State Min. Bur., 11th Rept., pp. 210-218.

Describes the superficial formations of a portion of the county, with remarks on some coal mines.

1001 —— Humboldt County [California].

Cal. State Min. Bur., 11th Rept., pp. 227-232.

Gives notes on some of the coal seams and gold-bearing sands of the coast.

1002 —— Kern County [California].

Cal. State Min. Bur., 11th Rept., pp. 233-238.

Notes on the occurrence of sulphur and gypsum and artesian wells.

1003 —— Lake County [California].

Cal. State Min. Bur., 11th Rept., pp. 239-240.

Notes on some quicksilver mines.

1004 —— Marin County [California].

Cal. State Min. Bur., 11th Rept., pp. 249-254.

Brief notes on the occurrence of coal, silver, gold, copper, iron, and manganese.

1005 —— Sacramento County [California].

Cal. State Min. Bur., 11th Rept., pp. 334-336.

Notes on the occurrence of coal.

1006 —— Santa Clara County [California].

Cal. State Min. Bur., 11th Rept., pp. 374-375.

Brief notes on the occurrence of quicksilver, manganese, and magnesite.

1007 **Watts** (W. L.). Sonoma County [California].

Cal. State Min. Bur., 11th Rept., pp. 453-463.

Notes on some coal and quicksilver mines.

1008 —— Stanislaus County [California].

Cal. State Min. Bur., 11th Rept., pp. 464-468.

Notes on the Summit quicksilver mine.

1009 **Weed** (Walter Harvey). Two Montana coal fields.

Geol. Soc. Am., Bull., vol. iii, pp. 301-330.

Abstract: Am. Geol., vol. xi, pp. 181-182.

Describes the extent, structure, lithologic character, and the fauna of the Great Falls coal field. The coal occurs in the Kootenai formation. Describes the extent and location of the Rocky Fork coal field. The coal seams occur interbedded with coarse sandstones and thin clayey shales, which are considered to represent Fort Union beds.

1010 —— The coal fields of Montana.

Eng. and Min. Jour., vol. liii, pp. 520-522 and 542-543, and vol. lv, p. 197.

Describes the geologic occurrence of the coal beds and the character and extent of the coal seams in the Rocky Fork, Bozeman, Cinnabar, Gallatin, Judith, Great Falls, Sweet Grass Hills, and the Flathead Valley coal fields of Montana.

1011 —— The fossil forests of the Yellowstone.

School of Min. Quart., vol. xiii, pp. 230-236.

Describes the geologic structure of the region and states that the fossil trees are found in a series of breccias and tuffs and have been exposed by weathering of the rocks. These forests grew upon the flanks of a volcano and were covered and preserved by the débris of its eruptions.

1012 —— Geysers.

Smith. Inst., Ann. Rept., 1891, pp. 163-178.

Describes the occurrence of geysers in different parts of the world, discusses the theories of geyser action, and gives a summary of conclusions.

1013 —— The glaciation of the Yellowstone Valley north of the park.

U. S. Geol. Surv., Bull. No. 104, pp. 11-41, pls. i-iv.

Describes the character of certain peculiar marginal valleys in this region, illustrated by colored geologic map showing the distribution of the glacial deposits.

1014 —— The Laramie and the overlying Livingston formation in Montana.

U. S. Geol. Surv., Bull. No. 105, pp. 10-63, pls. i-vi.

Describes the Laramie strata and applies the name Livingston to beds of post-Laramie age largely composed of volcanic material. Defines the Fort Union formation and discusses the evidences of unconformity between the Laramie and Livingston formations and the age of the Livingston series.

1015 **Weeks** (Joseph D.). Manganese.

U. S. Geol. Surv., Min. Res., 1892, pp. 169-226.

Discusses the origin and occurrence of manganese ores. Describes the deposits of Georgia, Arkansas, and Crimora, Va., the latter illustrated by two figures. Discusses the character of these ores and gives many analyses and tables of production.

1016 **Wells** (David A.). Remarkable bowlders.

Pop. Sci. Monthly, vol. xl, pp. 340-346.

Gives size and weight of some bowlders found in Connecticut and Massachusetts.

1017 **Wells** (H. G.). The making of mountain chains.

Sci. Am. Suppl., vol. xxxvi, pp. 14974-14975.

Reviews the theories concerning the formation of mountain ranges.

1018 **Wells** (H. L.) and **Penfield** (S. L.). On herderite from Hebron, Me.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 114-116.

Abstract: Am. Nat., vol. xxvii, p. 276 (¼ p.).

1019 **Westgate** (Lewis G.). The geographic development of the eastern part of the Mississippi drainage system.

Am. Geol., vol. xi, pp. 245-260.

Abstract: Jour. of Geol., vol. i, pp. 420-421.

Describes the post-Carboniferous drainage and its adjustment in different regions, the geographic and geologic features of the Cretaceous base-level and its elevation at the commencement of the Tertiary, and the character and extent of the Tertiary erosion.

1020 **White** (C. A.). On the Bear River formation, a series of strata hitherto known as the Bear River Laramie [Wyoming].

Am. Jour. Sci., 3d ser., vol. xliii, pp. 91-97.

Abstract: Am. Geol., vol. ix, pp. 266-267.

Reviews the publications of other writers regarding the age of the Bear River formation. His examinations, made in company with Mr. T. W. Stanton, whose article on the stratigraphic position of this formation immediately follows, led them to believe that the formation hitherto known as the Bear River Laramie is much older than it had hitherto been considered and that it underlies the equivalent of the Fort Benton Cretaceous.

1021 —— Correlation papers. Cretaceous.

U. S. Geol. Surv., Bull. No. 82.

Abstract: Am. Geol., vol. xii, pp. 398-399.

Noticed in Record for 1891.

1022 **White** (David). Flora of the outlying Carboniferous basins of southwestern Missouri.

U. S. Geol. Surv., Bull. No. 98, pp. 11-121, pls. i-v.

Gives the localities where specimens were found and a description of their manner of occurrence. Describes their general characteristics, habitat, and relations.

1023 —— A new tæniopteroid fern and its allies.

Geol. Soc. Am., Bull., vol. iv, pp. 119-132.

Abstracts: Jour. of Geol., vol. i, p. 419 (¼ p.); Am. Geol., vol. xi, p. 412 (7 l.); Am. Jour. Sci., 3d ser., vol. xlv, pp. 439-440 (½ p.).

Describes fossil plants from the Lower Coal Measures of the Carboniferous of Henry County, Mo.

1024 —— The Cretaceous at Gay Head, Marthas Vineyard.

Science, vol. xx, pp. 332-333.

Discusses the evidences of the age of certain beds in this vicinity.

1025 **White** (I. C.). The Mannington oil field and the history of its development. Appendix: The anticlinal theory of natural gas.

Geol Soc. Am., Bull., vol. iii, pp, 187-216.

Abstract: Am. Geol., vol. x, p. 65 (¼ p.).

The oil is found in the Pocono sandstone, the lowest member of the Carboniferous, and it is known that this horizon contains hydrocarbons over a wide area. Three vertical sections are given and a historical sketch of the Mannington field and of the application of the "anticlinal theory." It is believed that the petroleum has been formed from the organic matter within the rock itself and that by the tilting of the beds the water, gas, and oil have been rearranged according to their respective gravities under the existing artesian pressure.

1026 —— Fossil plants from the Wichita or Permian beds of Texas.

Geol. Soc. Am., Bull., vol. iii, pp. 217-218.

Gives a list of the fossil plants as determined by Prof. Wm. M. Fontaine. From a comparison of these plants with those found in the beds above the Waynesburg coal horizon of West Virginia, and the general stratigraphic relations, it follows that the beds known as the Dunkard Creek series are of Permian age.

1027 —— Stratigraphy of the bituminous coal field of Pennsylvania, Ohio, and West Virginia.

U. S. Geol. Surv., Bull. No. 65.

Abstracts: Am. Jour. Sci., 3d ser., vol. xliii, p. 156 (½ p.); Am. Geol., vol. ix, p. 264 (⅓ p.).

Noticed in Record for 1891.

1028 **Whiteaves** (J. F.). Description of a new genus and species of Phyllocarid Crustacea from the Middle Cambrian of Mount Stephens, British Columbia.

Can. Rec. Sci., vol. v, pp. 207-208.

Describes Anomalocaris (n. gen.), the locality where found, and the associated fauna.

1029 —— Notes on the Gasteropoda of the Trenton limestone of Manitoba, with a description of one new species.

Can. Rec. Sci., vol. v, pp. 317-328.

Describes the lithologic character of the Trenton limestone of Manitoba, with notes on the fossils found in it.

1030 —— Descriptions of two new species of Ammonites from the Cretaceous rocks of the Queen Charlotte Islands.

Can. Rec. Sci., vol. v, pp. 441-446.

Describes and figures Olcostephanus (Astieria) deansii (n. sp.) and Hoplites haidaquensis (n. sp.).

1031 —— The Orthoceratidæ of the Trenton limestone of the Winnipeg basin.

Can. Roy. Soc., Proc. and Trans., vol. ix, sect. iv, pp. 77-90.

Abstract: Am. Geol., vol. x, p. 124.

1032 **Whiteaves** (J. F.). Notes on the Ammonites of the Cretaceous rocks of the district of Athabasca, with description of four new species.

Can. Roy. Soc., Proc. and Trans., vol. x, sect. iv, pp. 111-121, pls. viii-xi.

Gives a section of the rocks in the region of the Athabasca and Lesser Slave rivers and describes some fossils found in these localities.

1033 —— The Cretaceous system of Canada.

Can. Roy. Soc., Proc. and Trans., vol. xi, sect. iv, pp. 3-19.

Gives an account of the species found in the Cretaceous of British America, and reviews the literature treating of the Cretaceous system of North America.

1034 —— Note on the recent discovery of large Unio-like shells in the Coal Measures at the South Joggins, Nova Scotia.

Can. Roy. Soc., Proc. and Trans., vol. xi, sect. iv, pp. 21-24.

Gives the views of the latest authorities on the occurrence of the genus Unio and describes and figures Asthenodonta westoni (n. sp.).

1035 —— The fossils of the Devonian rocks of the islands, shores, or immediate vicinity of Lakes Manitoba and Winnipegosis.

Can. Geol. Surv., Cont. to Paleontology, vol. i, part iv, pp. 255-359, pls. xxxiii-xlvii.

Abstracts: Am. Nat., vol. xxvii, pp. 469-470 (½ p.); Am. Jour. Sci., 3d ser., vol. xliv, p. 429 (½ p.).

Refers to the previous work done in this region and describes the characters of the fossils collected.

1036 **Whitfield** (Robert P.). Gasteropoda and Cephalopoda of the Raritan clays and greensand marls of New Jersey.

U. S. Geol. Surv., Monograph XVIII, pp. 402, pls. i-l, figs. 1-2.

Abstracts: Am. Geol., vol. xii, pp. 329-330; Am. Nat., vol. xxvii, pp. 728-729.

Contains tables showing the genera and species and their distribution in the several beds of New Jersey; also in other States, and description of species.

1037 —— Republication of descriptions of Lower Carboniferous Crinoidea from the Hall collection now in the American Museum of Natural History, with illustrations of the original type specimens not heretofore figured.

Am. Mus. Nat. Hist., Mem., vol. i, part i, pp. 1-37, pls. i-iii.

Quotes the descriptions of each species by Prof. James Hall, with comments.

1038 —— Discovery of a second example of the Macrouran decapod crustacean, Palæopalæomon newberryi.

Am. Geol., vol. ix, pp. 227-238.

Describes the specimen which is said to have been found in the Kinderhook group near Burlington, Iowa.

1039 **Whittle** (Charles Livy). An ottrelite-bearing phase of a metamorphic conglomerate in the Green Mountains.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 270-277.

Abstract: Am. Nat., vol. xxvii, p. 382 (½ p.).

Describes the occurrence and physical and microscopic characters of the ottrelite schist.

1040 **Whittle** (Charles Livy). Some dynamic and metasomatic phenomena in a metamorphic conglomerate in the Green Mountains.

Geol. Soc. Am., Bull., vol. iv, pp. 147-166.

Abstract: Am. Geol., vol. xi, p. 412 (½ p.).

Describes the character and extent of the ottrelite schist in the conglomerate and its alteration products and the petrographic characters of the rock. Describes the occurrence of clastic material in the conglomerate, the secondary enlargement of clastic tourmalines, the alteration of the feldspars, and the occurrence of albites.

1041 **Williams** (Albert, Jr.). Why dip is more likely to be regular than strike with fissure veins.

Eng. and Min. Jour., vol. liii, p. 398.

The fact that veins are usually on the lines of fault fissures is considered the principal reason why dip is more regular than strike.

1042 **Williams** (Edward H., Jr.). Glaciation in Pennsylvania.

Science, vol. xxi, p. 343.

Abstract: Am. Geol., vol. xii, p. 166 (¼ p.).

Gives some of the results of a study of the glacial phenomena in the vicinity of South Bethlehem.

1043 **Williams** (George Huntington). The volcanic rocks of South Mountain, in Pennsylvania and Maryland.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 482-496; Sci. Amer. Suppl., vol. xxxv, pp. 14208-14209.

Abstracts: Am. Geol., vol. xi, pp. 55-56; Johns Hopkins Univ. Circ., vol. xii, pp. 45-47.

Quotes the opinions of other writers assigning a sedimentary origin to the rocks of South Mountain. States that these rocks have preserved all the essential characteristics of recent rhyolites and basalts. Describes their petrographic characters and gives analyses of several varieties.

1044 —— Piedmontite and scheelite from the ancient rhyolite of South Mountain, Pennsylvania.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 50-57.

Describes the microscopic characteristics of these minerals and the occurrence of piedmontite as a microscopic constituent of rhyolite. Gives two chemical analyses and a list of the recorded occurrences of piedmontite as a rock constituent.

1045 —— On the use of the terms poikilitic and micro-poikilitic in petrography.

Jour. of Geol., vol. i, pp. 176-179.

Describes various occurrences of this structure and suggests the use of the terms in petrographic descriptions.

1046 —— Notes on the microscopical character of rocks from the Sudbury mining district, Canada.

Can. Geol. Surv., Reports, vol. v, new series, 1890-91, part i, Report F, appendix 1, pp. 55-82.

The suite of rocks upon which this examination was based consists mainly of clastic rocks derived from granitic or gneissic débris and eruptives contemporaneous or subsequent in origin to the former. Both have been subjected to metamorphism and recrystallization. Describes the microscopic characters of greywacke, granite, gabbro, diorite, felsite, biotite-epidote gneiss, horneblende-biotite gneiss, sericitic-chlorite schist, vitrophyre tuff, and other rock varieties.

1047 **Williams** (George Huntington). Notes on some eruptive rocks from Alaska.

Nat. Geog. Mag., vol. iv, pp. 63–74.

Describes the petrographic characters of diorite, gabbro, micropegmatite, quartz-porphyry, hornblende-porphyrite, augite-porphyrite, and diabase,and states that these rocks bear a strong resemblance to the rocks which have come from portions of the Cordilleras and Great Basin farther southward.

1048 —— [Geology of Maryland.]

Maryland: Its Resources, Industries, and Institutions, Baltimore, 1893, pp. 55–58.

Abstract: Am. Geol., vol. xii, pp. 396–398.

Includes a general description of the various geologic formations of Maryland.

1049 —— and **Clark** (W. B.). Reports on short excursions made by the geological department of the university during the autumn of 1891.

Johns Hopkins Univ. Circ., vol. xi, pp. 37–39.

Describes the characters of the Coastal Plain deposits, their line of contact with the crystalline rocks and the rocks of the Piedmont plateau as seen in the sections examined.

1050 **Williams** (Henry Slater). The making of the geological time-scale.

Jour. of Geol., vol. i, pp. 180–197.

Reviews the classification of the geologic epochs adopted by different authors.

1051 —— The elements of the geological time-scale.

Jour. of Geol., vol. i, pp. 283–295.

Describes the geologic events which marked the periods that are represented in geologic classification and reviews the different estimates of the duration of geologic time.

1052 —— On the ventral plates of the carapace of the genus Holonema of Newberry.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 285–288.

Refers to previous descriptions of these plates and describes and figures their restoration from a specimen found in the Oneonta sandstone of New York.

1053 —— The scope of paleontology and its value to geologists.

Am. Geol., vol. x, pp. 148–169; Am. Assoc. Adv. Sci., Proc., vol. xli, pp. 149–170.

Reviews the history of the development of paleontology and the application of its principles by various writers in correlating the strata of different regions. The morphological characters exhibited by fossils indicate their ancestry and the conditions of their environment, and thus they become of paramount importance in investigations which pertain to the order of sequence of strata or to time-intervals.

1054 **Willimott** (C. W.). Canadian gems and precious stones.

Ottawa Nat., vol. v, pp. 117–142.

Gives a description of precious stones and the locality of their occurrence in Canada.

1055 **Willis** (Bailey). Studies in structural geology: The mechanics of Appalachian structure.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 551-566.

U. S. Geol. Surv., 13th Ann. Rept., part ii, pp. 217-281, pls. xlvi-xcvi, figs. 16-17.

Abstracts: Jour. of Geol., vol. i, pp. 96-97; Eng. and Min. Jour., vol. liv, pp. 390-391.

Describes the structural features of the Appalachian region from Cambrian to Silurian time and discusses the conditions of folding and faulting. Gives an account of some experiments made to reproduce the forms of folding, illustrated by sketches. Gives the author's conclusions drawn from the experiments and discusses the different theories which have been advanced to explain the cause of Appalachian compression.

1056 —— Outlines of Appalachian history.

U. S. Geol. Surv., Geol. Atlas of the United States, Kingston, Chattanooga, and Ringgold sheets, Preliminary edition, 1892.

Describes the processes of sedimentary formation in the Appalachian province. Gives a general sketch of the Cambrian, Silurian, Devonian, Carboniferous, and post-Carboniferous epochs and a brief description of the mineral resources.

1057 —— Conditions of sedimentary deposition.

Jour. of Geol., vol. i, pp. 476-520.

Classifies the processes of erosion, discusses the sequence of sediments, and classifies and describes the processes of sedimentation and organic deposition.

1058 —— and **Hayes** (C. W.). Conditions of Appalachian faulting.

Am. Jour. Sci., 3d ser., vol. xlvi, pp. 257-268.

Abstract: Jour. of Geol., vol i, p. 861.

Describes the conditions of sedimentation prior to the development of Appalachian structure and the conditions under which step-folds and thrust faults and repeated parallel folds or faults were developed. Compares the theoretical conclusions with the observed Appalachian structure and discusses the evidence indicating the direction from which the compressive force acted.

1059 **Williston** (S. W.). The Niobrara Cretaceous of western Kansas.

Kans. Acad. Sci., Trans., vol. xiii, pp. 107-111, 2 pls.

Gives a history of the early explorations in this region. Describes many exposures assigned to the Cretaceous and discusses the evidences which indicate their geologic age.

1060 **Wills** (J. Lainson). On natural phosphates.

Ottawa Nat., vol. vi, pp. 7-22.

Gives in tabular form the approximate geologic age of the different phosphate deposits, the chemical analyses of some phosphatic materials and a classification of natural phosphates, and describes deposits occurring in different countries.

1061 —— [The phosphate mines of Canada.]

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 1000-1002.

In discussion of paper by H. B. Small.

1062 **Wilson** (E. B.). [Faulting in veins.]

Eng. and Min. Jour., vol. liii, p. 638 (correspondence).

Describes occurrence of "slickensides" in certain mines.

1063 **Wiltsee** (E. A.). Some additional Sierra County mines [California].

Cal. State Min. Bur., 11th Rept., pp. 413-419.

Notes on some gold mines.

1063*a* —— **Hobson** (J. B.) and. Nevada County [California].

See Hobson (J. B.) and Wiltsee (E. A.), 460.

1064 **Wiltsee** (Ernest). Notes on the geology of the Half-Moon Mine, Pioche, Nev.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 867-873.

Abstract: Eng. and Min. Jour., vol. lv, p. 175.

Describes the geologic occurrence of the ore and the vein structure in this mine.

1065 **Winchell** (Horace V.). The Mesabi iron range.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 644-686; Minn. Geol. and Nat. Hist. Surv., 20th Ann. Rept., pp. 111-180.

Abstracts: Am. Geol., vol. xi, pp. 355-356; Eng. and Min. Jour., vol. lv., pp. 177-178.

Describes the geology of the Mesabi Range, the stratigraphic relations of the Taconic and Archean rocks and the occurrence and quality of the ore and its varieties, and discusses the question of its origin.

1066 —— Note on Cretaceous in northern Minnesota.

Am. Geol., vol. xii, pp. 220-223.

Gives a list of fossils, determined by Dr. C. A. White to be of Cretaceous age, found in northern Minnesota. Describes other localities in which Cretaceous strata occur.

1067 —— and **Jones** (J. T.). The Biwabik mine.

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 951-961.

Describes the character of the ore and the extent of developments in this mine, located in the Mesabi Range, Minnesota.

1067*a* —— **Winchell** (N. H.) and. The iron ores of Minnesota.

See Winchell (N. H.) and Winchell (H. V.), 1080.

1068 **Winchell** (N. H.). The crystalline rocks.

Minn. Geol. and Nat. Hist. Surv., 20th Ann. Rept., pp. 1-28.

Gives a list of the principal rock formations of the Minnesota Lake Superior region and discusses the general principles of original and acquired rock structure, the character of the greenstones and schists, and the origin of crystalline rocks.

1069 —— Field notes of N. H. Winchell in 1890.

Minn. Geol. and Nat. Hist., 20th Ann. Rept., pp. 29-34.

Gives notes on some rock exposures in northeastern Minnesota.

1070 —— Oxide of manganese.

Minn. Geol. and Nat. Hist. Surv., 20th Ann. Rept., pp. 321-322.

Contains brief note, with chemical analysis, of an occurrence of manganese found in Wright County, Minn.

1071 —— The iron-bearing formations of northeastern Minnesota.

Abstract: Minn. Acad. Nat. Sci., Bull., vol. iii, pp. 168-169.

Brief description of the geologic formations of the region.

1072 **Winchell** (N. H.). The so-called Huronian rocks in the vicinity of Sudbury, Ontario.

Abstract: Minn. Acad. Nat. Sci., Bull., vol. iii, pp. 183–185.

Gives a summary of observations in this region and concludes that the Huronian, as defined by Canadian geologists, embraces two or three formations—the true Huronian, the Keewatin, and Vermillion series.

1073 —— The iron-bearing rocks of Minnesota.

Abstract: Minn. Acad. Nat. Sci., Bull., vol. iii, pp. 277–280.

Gives a brief description of the formations in which iron ore occurs and of the manner of its deposition.

1074 —— Frondescent hematite.

Am. Geol., vol. xi, pp. 20–21.

Refers to description of similar phenomena by W. S. Gresley in Am. Geol., April, 1892, and discusses the cause of certain channels which maintain their form and direction through the mass of the material.

1075 —— The Norian of the Northwest.

Minn. Geol. and Nat. Hist. Surv., Bull. No. 8, pp. iii–xxxiv.

Abstract: Am. Geol., vol xii, p. 60.

Gives an account of the investigation of the gabbros of the northern coast of Lake Superior, reviews the literature on the geology of this region, and describes the character and extent of gabbro rocks.

1076 —— The Kawishiwin agglomerate of Ely, Minn.

Am. Geol., vol. ix, pp. 359–368.

This agglomerate is the northern representative of the Lake Superior greenstones and is assigned to the Keewatin division of the Archean. Describes its peculiar characteristics at Ely and considers it originated from the joint action of oceanic water and igneous action.

1077 —— An approximate interglacial chronometer.

Am. Geol., vol. x, pp. 69–80.

Explains the evidences which indicate that the ancient Mississippi River once occupied a wider and deeper valley in Minnesota, and that it was choked up and expelled from its course by the movement of ice from the northeast on the initiation of the Glacial period. That during the interglacial period the river cut out a gorge, from which the author estimates the time-interval between the recession of the ice and its second invasion.

1078 —— Some problems of the Mesabi iron ore.

Am. Geol., vol. x, pp. 169–179.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xli, p. 176 (7 l.).

Describes briefly the different hypotheses concerning the origin of iron ores, the character of the Mesabi iron ores and the stratigraphic relations of the inclosing rocks, and concludes that oceanic sedimentation is the only agent sufficient to explain the geographic and stratigraphic distribution of these deposits.

1079 —— Classification of the theories of the origin of iron ores.

Am. Geol., vol. x, pp. 277–278.

Gives in tabular form the theories advanced concerning the origin of iron ores.

1080 **Winchell** (N. H.) and **Winchell** (H. V.). The iron ores of Minnesota.

Minn. Geol. and Nat. Hist. Surv., Bull. No. 6, pp. 1–429, geologic map, 26 figures and 44 plates.

Includes a review of earlier Minnesota reports and describes the megascopic and microscopic characters of the Vermillion schists and the qualities and origin of their contained magnetites, those of the Keewatin schists and their hematites, and the character of the inclosing rocks of the Taconic (Animikie) ores and their origin, and includes a brief description of the Cretaceous limonites and of the various mines and explorations in each of these formations. Classifies and discusses the different theories on the origin of iron ores, with a bibliography of the subject and concluding observations. Appendix A is a discussion of a possible chemical origin of the Keewatin ores. Appendix B compares the Taconic ores of Minnesota and western New England. Appendix C discusses the eastern equivalents of the iron ores of Minnesota.

1081 —— and **Schuchert** (C.). Preliminary descriptions of new Brachiopoda from the Trenton and Hudson River groups of Minnesota.

Am. Geol., vol. ix, pp. 284–294.

Abstract: Am. Geol., vol. xii, p. 332 (½ p.).

Describes different species and mentions the formation and locality where found.

1082 **Winslow** (Arthur). An illustration of the flexibility of limestone.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 133–134.

Describes and illustrates by sketch the flexibility of a slab of limestone.

1083 —— Notes on the Cambrian in Missouri and the classification of the Ozark series.

Am. Jour. Sci., 3d ser., vol. xlv, pp. 221–226.

Describes the earlier work in this region and the classification then adopted. Gives a résumé of the results attained by the present State Geological Survey of Missouri, accompanied by two cross-sections and a statement of what is considered to be the geologic succession.

1084 —— The Osage River and its meanders.

Science, vol. xxii, pp. 31–32.

Discusses the hypothesis of a former base-leveled condition to explain the sunken curved course of this river and suggests a different hypothesis.

1085 —— The mapping of Missouri.

St. Louis Acad. Sci., Trans., vol. vi, No. 3, pp. 57–99.

Abstract: Am. Geol., vol. x, p. 323 (⅜ p.).

Gives an account of the early explorations in the State and the maps published from the results of these explorations. Describes the work of mapping undertaken by the various State geological surveys of Missouri and the United States Geological Survey.

1086 **Winslow** (Arthur). The Missouri Coal Measures and the conditions of their deposition.

Geol. Soc. Am., Bull., vol. iii, pp. 109-121. Sketch map and seven sections.

Discusses the evidences which indicate the relations of the Lower Silurian and Carboniferous formations. The present marginal limits of the Coal Measures are near the original ones, since the marginal beds are distinctly marginal deposits and no Coal Measure strata occur far away from the general margin of the formation. Describes the rocks, of the Coal Measure series and the conditions of their deposition.

1087 —— A preliminary report on the coal deposits of Missouri.

Mo. Geol. Surv., 1891, pp. 19-226, with 131 illustrations.

Abstracts: Am. Geol., vol. xi, pp. 271-273; Am. Jour. Sci., 3d ser., vol. xliii, p. 435 (½ p.).

Describes the topographic and geologic features of the Coal Measure formation, the process of its deposition, the distribution and character of the contained coal beds and the conditions of the coal industry. Gives a description of the coal seams now worked in each county.

1088 —— The Higginsville sheet in Lafayette County [Missouri].

Mo. Geol. Surv., 1892, pp. 1-17.

Review: Am. Geol., vol. x, pp. 317-318.

Describes the topographic and hydrographic features of the area and the stratigraphy and structure of the formations represented, including sections showing the thicknesses and succession of coal seams and associated strata and a description of other mineral resources. Accompanied by a geologic and topographic map and a sheet of geologic sections.

1089 —— The Coal Measures of Missouri.

U. S. Geol. Surv., Min. Res., 1892, pp. 429-436.

The coal area forms a plateau of moderate elevation but slightly affected by erosion, and composed of horizontal strata of Carboniferous age. The measures are thickest near the margins, where they occur near the surface. The coals are all bituminous, except cannel coal, which is found in local and small deposits.

1090 —— Notes on the lead and zinc deposits of the Mississippi Valley and the origin of the ores.

Jour. of Geol., vol. i, pp. 612-619.

Gives a brief history of mining operations in this region. Reviews the literature and the theories advanced concerning the origin of these deposits.

1091 **Witter** (F. M.). Gas wells near Letts, Iowa.

Am. Geol., vol. ix, pp. 319-321.

Iowa Acad. Sci., Proc., vol. i, part ii, pp. 68-70.

States that gas was struck at a depth of 100 feet and that it probably comes from an accumulation of vegetable matter buried in the heavy drift deposit.

1092 **Wolff** (J. E.). The geology of the Crazy Mountains, Montana.

Geol. Soc. Am., Bull., vol. iii, pp. 445–452.

Abstracts: Am. Geol., vol. x, pp. 319–321; Am. Nat., vol. xxvi, pp. 1027–1028 (½ p.).

Describes the topographic features of the region. The range is made up of nearly horizontal Cretaceous rocks, consisting of sandstones and conglomerates, interstratified with shales and calcareous beds. Many laccolites occur which form the caps of monoclinal buttes developed on either side of the range. The eruptives occur in dikes, sheets, and laccolites, but no surface flows were observed.

1093 —— and **Tarr** (R. S.). Acmite-trachyte from the Crazy Mountains, Montana.

Harv. Mus. Comp. Zool., Bull., vol. xvi, pp. 227–233.

Abstract: Jour. of Geol., vol. i, pp. 637–638.

Describes the field occurrence and petrographic characters of some trachytic rocks from the Crazy Mountains.

1094 **Wood** (Herbert). Flathead coal basin, Montana.

Eng. and Min. Jour., vol. liv, p. 57.

Describes the topographic and geologic features of the region and the structural features of the coal seams.

1095 —— Mineral zones in Montana.

Eng. and Min. Jour., vol. liv, p. 292.

Describes some mineral zones of Montana and discusses their relation to the question as to the usual occurrence of certain mineral zones in certain geologic formations.

1096 —— Gold in placers.

Am. Geol., vol. ix, pp. 371–377.

States the general features of placer deposits and the manner of occurrence of gold in them. Gives a description of several Montana placers.

1097 —— A note on the Cretaceous of northwestern Montana.

Am. Jour. Sci., 3d ser., vol. xliv, pp. 401–406.

Describes the geologic formations of the region. The Cretaceous beds rest against the upturned edges of the Cambrian, consisting of about 7,500 feet of clays, shales, and sandstones. The coal of this district is lignitic.

1098 —— Glaciation in western Montana.

Science, vol. xx, p. 162.

Describes the general features of the country and the principal effects of its former glaciation.

1099 —— The Cabinet anticlinal.

Can. Rec. Sci., vol. v, pp. 261-266.

Describes the structure of a range of mountains on the borders of Idaho and Montana.

1100 **Woodward** (Arthur Smith). On the Lower Devonian fish fauna of Campbellton, New Brunswick.

Geol. Mag., dec. iii, vol. ix, pp. 1–6.

Abstract: Am. Geol., vol. ix, p. 263 (½ p.).

Describes some specimens recently collected in this locality.

1101 **Woodward** (Arthur Smith). Further contributions to knowledge of the Devonian fish fauna of Canada.

Geol. Mag., dec. iii, vol. ix, pp. 481–485.

Abstract: Am. Jour. Sci., 3d ser., vol. xlv, p. 73.

Describes some fish remains from the Upper Devonian of Quebec.

1102 **Woodworth** (J. B.). Note on the occurrence of erratic Cambrian fossils in the Neocene gravels of the island of Marthas Vineyard.

Am. Geol., vol. ix, pp. 243–247.

Describes the conglomerate bed in which the fossils were found and states that the pebbles were derived from a calcareous zone of the Olenellus Cambrian. Considers that there is an extensive Cambrian section in this region which is now concealed or has been removed by erosion.

1103 —— An attempt to estimate the thickness of the ice blocks which gave rise to lakelets and kettle-holes.

Am. Geol., vol. xii, pp. 279–284.

Refers to the occurrence of certain lakelets and ponds in Massachusetts and discusses the possibility of estimating the thickness of the ice that once filled them.

1104 **Woolman** (Lewis). Cretaceous ammonites and other fossils near Moorestown, N. J. Their stratigraphic position shown by an artesian-well section at Maple Shade, N. J. Incidental reference to water horizons.

Phil. Acad. Nat. Sci., Proc., 1893, part ii, pp. 219–224.

Describes the occurrence of some Cretaceous fossils from New Jersey.

1105 —— Artesian wells in southern New Jersey.

N. J. Geol. Surv., Ann. Rept. 1892, pp. 275–311.

Gives the sections displayed by numerous wells in this region, showing the thickness and character of the strata.

1106 **Wortman** (J. L.). On the divisions of the White River or Lower Miocene of Dakota.

Am. Mus. Nat. Hist., Bull., vol. v, pp. 95–105.

Describes the lithologic character of the Lower Miocene beds and their fauna, with a discussion of the distribution of the fauna and succession of types.

1107 —— and **Earle** (C.). Ancestors of the tapir from the Lower Miocene of Dakota.

Am. Mus. Nat. Hist., Bull., vol. v, pp. 159–180.

Discusses the origin of the tapir in America, describes species obtained from the Miocene of South Dakota, and reviews the evidence of the relationships between American and European species of Protapirus.

1108 —— **Osborn** (H. F.) and. Characters of Protoceras (Marsh), the new Artiodactyl from the Lower Miocene.

Am. Mus. Nat. Hist., Bull., vol. iv, pp. 351–371.

Abstracts: Am. Jour. Sci., 3d ser., vol. xlv, p. 160 (½ p.); Am. Nat., vol. xxvii, pp. 147–148.

Description of species and discussion of characters of species recently found.

1109 **Wortman** (J. L.)., **Osborn** (H. L.) and. Artionyx, a new genus of Ancyclopoda.

Am. Mus. Nat. Hist., Bull., vol. v, pp. 1-18.

Describes remains found in the Miocene of South Dakota.

1109*a* —— Fossil mammals of the Wasatch and Wind River beds.

See Osborn (H. L.) and Wortman (J. L.), 707.

1110 **Wright** (A. A.). Extra-morainic drift in New Jersey.

Am. Geol., vol. x, pp. 207-216.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xli, p. 175 (½ p.).

Classifies the glacial deposits at various localities where extra-morainic materials occur. Accompanied by geologic sketch map.

1111 —— Older drift in the Delaware Valley.

Am. Geol., vol. xi, pp. 184-186.

Gives summary statements concerning the examination of Delaware Valley deposits which indicate the presence of older drift.

1112 **Wright** (G. Frederick). Supposed interglacial shell beds in Shropshire, England.

Geol. Soc. Am., Bull., vol. iii, pp. 505-508.

Describes the location and character of the shell beds. Considers they are not evidence of an interglacial subsidence, but that they were pushed along with other transported material by the glacier.

1113 —— The supposed post-Glacial outlet of the Great Lakes through Lake Nipissing and the Mattawa River.

Geol. Soc. Am., Bull., vol. iv, pp. 423-425.

Describes certain glacial phenomena indicating the temporary existence of another outlet to the Great Lakes in post-Glacial time.

1114 —— Additional evidence bearing upon the glacial history of the Upper Ohio Valley.

Am. Geol., vol. xi, pp. 195-199.

Discusses the evidences which indicate the pre-Glacial age of the Upper Ohio gorge, rather than interglacial.

1115 —— Theory of an interglacial submergence of England.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 1-8.

Discusses the evidence in favor of an interglacial submergence of England afforded by marine shells on elevated positions. Favors the view that they have been raised by an advancing ice sheet from the sea-level to their present position. Instances phenomena of the Muir glacier in Alaska and the terminal moraines of Pennsylvania.

1116 —— Unity of the Glacial epoch.

Am. Sour. Sci., 3d ser., vol. xliv, pp. 351-373.

Reviews the opinions of other writers on the Glacial period. Gives the results of recent studies in New Jersey and Pennsylvania, accompanied by map of the region. Discusses the relations of the terraces of the Ohio River and its tributaries.

1117 —— Extra-morainic drift in the Susquehanna, Lehigh, and Delaware valleys.

Phila. Acad. Nat. Sci., Proc., 1892, part iii, pp. 469-484.

Quotes the opinions of various writers on glacial phenomena and gives the results of the author's recent observations in this region and the conclusions drawn therefrom.

1118 **Wright** (G. Frederick). Recent discoveries concerning the relation of the Glacial period in North America to the antiquity of man.

Brit. Assoc. Adv. Sci., Rept. 1891, pp. 647-649.

Incidentally refers to the tracing of the southern boundary of the glaciated region on the western continent and to the question of a succession of glacial epochs.

1119 **Wyatt** (Francis). The phosphates of Florida.

Eng. and Min. Jour., vol. liii, pp. 202-204.

Describes the topographic and geologic features of the State and the characteristics of the phosphate deposits. Discusses the question of their origin. This article taken from "Phosphates of America."

1120 —— [On the analysis of mineral phosphates].

Am. Inst. Min. Engrs., Trans., vol. xxi, pp. 172-174.

In discussion of paper by T. M. Chatard "Phosphate chemistry as it concerns the miner."

Y.

1121 **Yeates** (William S.). Plattnerite and its occurrence near Mullan, Idaho.

Am. Jour. Sci., 3d ser., vol. xliii, pp. 407-412.

Reviews previous descriptions of this mineral. Describes its mineral associates and gives a chemical analysis.

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  - texana n. sp., Cragin, 186.
  - tosta n. sp., Cragin, 186.
- Anchisaurus, Marsh, 640.
  - colurus, Marsh, 634.
  - solus n. sp., Marsh, 634.
- Anchura
  - abrupta?, Whitfield, 1036.
  - abrupta var. acutispira n. var. Whitfield, 1036.
  - arenaria, Whitfield, 1036.
  - modesta n. sp., Cragin, 186.
  - pagodaformis n. sp., Whitfield, 1036.
  - pennata, Whitfield, 1036.
  - solitaria n. sp., Whitfield, 1036.
  - (Drepanochilus) compressa n. sp., Whitfield, 1036.
  - (Drepanocheilus) ruida White, Stanton, 861.
- Ancillaria shepardi n. sp., Dall, 215.
- Ancylopodia, Osborn, 702.
- Andromeda
  - cretacea n. sp., Lesquereux, 582.
  - linifolia n. sp., Lesquereux, 582.
  - parlatorii Heer, var. longifolia n. var., Lesquereux, 582.
  - pfaffiana Heer, Lesquereux, 582.

Paleontology—Continued.
Genera and species described—Continued.
- Andromeda
  - snowii n. sp., Lesquereux, 582.
  - tenuinervis n. sp., Lesquereux, 582.
  - wardiana n. sp., Lesquereux, 582.
- Angiopteridium canmorense, Dawson, 238.
- Annularia
  - sphenophylloides (Zenk.) Gutb., White 1022.
  - stellata (Schloth.) Wood., White, 1022.
- Anodontopsis affinis n. sp., Whiteaves, 1035.
- Anomalocaris n. gen., Whiteaves, 1028.
- Anomia
  - concentrica Meek, Stanton, 861.
  - propatoris White?, Stanton, 861.
  - subquadrata n. sp., Stanton, 861.
  - texana n. sp., Hill, 435.
- Anoplotheca Sandberger, Hall, 384.
  - (Coelospira) Hall, Hall, 384.
- Anser condoni n. sp., Shufeldt, 837.
- Anthonomus
  - arctus, Scudder, 823.
  - concussus, Scudder, 823.
  - corruptus, Scudder, 823.
  - debilatus, Scudder, 823.
  - defossus, Scudder, 823.
  - evigilatus, Scudder, 823.
  - primordius, Scudder, 823.
  - reventus, Scudder, 823.
  - revictus, Scudder, 823.
  - soporus, Scudder, 823.
- Anthracomartus woodruffi, Scudder, 826.
- Anthribus sordidus, Scudder, 823.
- Apeibopsis cyclophylla n. sp., Lesquereux, 582.
- Apheleceras, Hyatt, 478.
- Aphlebia arborescens Lx. sp., White, 1022.
- Apion
  - confectum, Scudder, 823.
  - curiosum, Scudder, 823.
  - exanimale, Scudder, 823.
  - evestigatum, Scudder, 823.
  - pumilum, Scudder, 823.
  - refrenatum, Scudder, 823.
  - smithii, Scudder, 823.
- Apocynophyllum sordidum n. sp., Lesquereux, 582.
- Aporrhais
  - (Goniocheila) castorensis Whitfield, Stanton, 861.
  - (Perissoptera?) prolabiata (White), Stanton, 861.
- Aquila
  - pliogryps n. sp., Shufeldt, 837.
  - sodalis n. sp., Shufeldt, 837.
- Aralia
  - berberidifolia n. sp., Lesquereux, 582.
  - grœnlandica Heer, Lesquereux, 582.
  - masoni n sp., Lesquereux, 582.
  - saportanea Lesq., var. deformata n. var., Lesqureux, 582.
  - subemarginata Lesq., Lesquereux, 582.
  - towneri Lesq., Lesquereux, 582.
  - wellingtoniana n. sp., Lesquereux, 582.
- Araucarites reichenbachi Gein, Lesquereux, 582.

- **Paleontology**—Continued.
  - *Genera and species described*—Continued.
    - Arca
      - galliennei, var. tramitensis, n. var., Cragin, 186.
      - (Trigonarca) siouxensis M. and H. Cragin, 186.
    - Archæocidaris legrandensis n. sp., Miller and Gurley, 673.
    - Architectonica annosa, Whitfield, 1036.
    - Arisæma cretacea n. sp., Lesquereux, 582.
    - Arthrophycus Hall, James, 494.
    - Artionyx, Osborn, 702.
      - gaudryi n. sp., Osborn and Wortman, 709.
    - Artocarpidium cretaceum Ett., Lesquereux, 582.
    - Artocarpophyllum occidentale n. sp., Dawson, 239.
    - Asaphas diurus Green, Clarke, 145.
    - Aspidichthys? notabilis n. sp., Whiteaves, 1035.
    - Aspidiophyllum dentatum Lesq., Lesquereux, 582.
    - Aspidium fredericksburgense, Dawson, 238.
    - Asplenium dicksonianum Heer, Lesquereux, 582.
    - Astarte (? Stearnsia) acuminata n. sp., Cragin, 186.
    - Asterias (?) dubium Whitfield, Clark, 139.
    - Asthenodonta westoni n. sp., Whiteaves, 1034.
    - Astralites n. gen., Whiteaves, 1035.
      - fimbriatus n. sp., Whiteaves, 1035.
    - Astralium
      - precursor n. sp., Dall, 215.
      - (Lithopoma) chipolanum n. sp., Dall, 215.
    - Astrapis desiderata n. sp., Walcott, 980.
    - Astylospongia, James, 491.
    - Asymptoceras, Hyatt, 478.
    - Asymptoceras newtoni n. sp., Hay, 404.
    - Athyris McCoy, Hall, 384.
      - (Actinoconchus) McCoy, Hall, 384.
      - (Cliothyris) King, Hall, 384.
      - (Seminula) McCoy, Hall, 384.
      - (Spirigerella) Waagen, Hall, 384.
    - Atocus n. gen., Scudder, 824.
      - defessus, Scudder, 824.
    - Atrypa Dalman, Hall, 384.
      - (Gruenewaldtia) Tschernyschew, Hall, 384.
    - Atrypina n. gen., Hall, 384.
    - Aturia vanuxemi, Whitfield, 1036.
    - Aublysodon Leidy, Marsh, 635.
    - Auletes wymani, Scudder, 823.
    - Aulobaris
      - anicilla, Scudder, 823.
      - circumscripta, Scudder, 823.
      - comminnuta, Scudder, 823.
      - damnata, Scudder, 823.
    - Aulonotreta Kutorga, Hall, 383.
    - Aulosteges von Helmersen, Hall, 383.
    - Avellana bullata, Whitfield, 1036.
    - Avicula
      - gastrodes Meek, Stanton, 861.
      - leveretti n. sp., Cragin, 186.
      - singleyi n. sp., Cragin, 186.
    - Aviculopecten
      - germanus n. sp., Miller and Faber, 672.
      - sculptilis n. sp., Miller, 670.

- **Paleontology**—Continued.
  - *Genera and species described*—Continued.
    - Baculites
      - asper, Whitfield, 1036.
      - asper Morton ?, Stanton, 861.
      - compressus, Whitfield, 1036.
      - gracilis Shumard ?, Stanton, 861.
      - ovatus, Whitfield, 1036.
    - Balaninus
      - anicularis, Scudder, 823.
      - duttoni, Scudder, 823.
      - femoratus, Scudder, 823.
      - flexirostris, Scudder, 823.
      - minusculus, Scudder, 823.
      - restrictus, Scudder, 823.
    - Barbarothea n. gen., Scudder, 824.
      - florissanti, Scudder, 824.
    - Barbatia micronema (Meek), Stanton, 861.
    - Baris
      - divisa, Scudder, 823.
      - harlani, Scudder, 823.
      - imperfecta, Scudder, 823.
      - matura, Scudder, 823.
    - Barroisella n. gen., Hall, 383.
    - Barycrinus
      - princeps n. sp., Miller and Gurley, 673.
      - sculptilis, Whitfield, 1037.
    - Batocrinus
      - æquibrachiatus var. alatus, Whitfield, 1037.
      - agnatus n. sp., Miller, 670.
      - bisbrachiatus n. sp., Whitfield, 1037.
      - boonvillensis n. sp., Miller, 670.
      - cantonensis n. sp., Miller and Gurley, 673.
      - crawfordsvillensis n. sp., Miller, 670.
      - decorus n. sp., Miller, 670.
      - discoideus, Whitfield, 1037.
      - facetus n. sp., Miller and Gurley, 673.
      - genista n. sp., Miller and Gurley, 673.
      - gorbyi n. sp., Miller, 670.
      - gurleyi n. sp., Miller, 670.
      - inornatus, Whitfield, 1037.
      - jucundus n. sp., Miller and Gurley, 673.
      - laura, Whitfield, 1037.
      - legrandensis n. sp., Miller and Gurley, 673.
      - lepidus, Whitfield, 1037.
      - marinus n. sp., Miller and Gurley, 673.
      - mediocris n. sp., Miller, 670.
      - oblatus, Whitfield, 1037.
      - poculum n. sp., Miller and Gurley, 673.
      - pulchellus n. sp., Miller, 670.
      - scopæ n. sp., Miller and Gurley, 673.
      - shepardi n. sp., Rowley, 790.
      - spartarius n. sp., Miller and Gurley, 673.
      - spergenensis n. sp., Miller, 670.
      - venustus n. sp., Miller, 670.
    - Batodon tenuis n. gen. et sp., Marsh, 632.
    - Beatricea, James, 491.
      - nodulosa James, 491.
      - undulata James, 491.
    - Belemnitella americana, Whitfield, 1036.
    - Belemnites (?) ambiguus, Whitfield, 1036.
    - Bellerophon
      - gorbyi n. sp., Miller, 670.
      - pelops (?) Hall, var., Whiteaves, 1035.
    - Belodon superciliosus Cope n. sp., Cope, 183.

Paleontology—Continued.
  Genera and species described—Continued.
    Betula perantiqua Dn., Dawson, 239.
    Betulites Heer, Lesquereux, 582.
      populifolius n. sp., Lesquereux, 582.
      rugosus n. sp., Lesquereux, 582.
      snowii n. sp., Lesquereux, 582.
      westii n. sp., Lesquereux, 582.
        var. crassus, Lesquereux, 582.
          cuneatus, Lesquereux, 582.
          grewiopsideus, Lesquereux, 582.
          inæquilateralis, Lesquereux, 582.
          lanceolatus, Lesquereux, 582.
          latifolius, Lesquereux, 582.
          multinervis, Lesquereux, 582.
          oblongus, Lesquereux, 582.
          obtusus, Lesquereux, 582.
          populoides, Lesquereux, 582.
          quadratifolius, Lesquereux, 582.
          reniformis, Lesquereux, 582.
          rhomboidalis, Lesquereux, 582.
          rotundatus, Lesquereux, 582.
          subintegrifolius, Lesquereux, 582.
    Beyrichona tinea Matt., Matthew, 654.
    Bifiustra brownii n. sp., Cragin, 186.
    Billingsella n. gen., Hall, 383.
    Bilobites Linné, Hall, 383.
    Bittium
      annettæ n. sp., Dall, 215.
      chipolanum n. sp., Dall, 215.
        var. burusii Dall, Dall, 215.
      cossmannii n. sp., Dall, 215.
      permutabile n. sp., Dall, 215.
      podagrinum n. sp., Dall, 215.
      (Diastoma?) varium Pfeiffer, Dall, 215.
      (Styliferina?)
        adamsi, Dall, 215.
        boiplex n. sp., Dall, 215.
        cerithidioides Dall, Dall, 215.
        priscum Dall, Dall, 215.
    Blairocrinus trijugis n. gen. et sp., Miller, 670.
    Blastomeryx gemmifer Cope, Cope, 183.
    Borophagus diversidens Cope, Cope, 183.
    Bothriolepis minor Newb., Cope, 179.
    Botriopygus alabamensis Clark, Clark, 139.
    Bourgueticrinus alabamensis de Loriol, Clark, 139.
    Brachiopoda, Beecher, 55, 63.
    Brachiospongia, James, 491.
      digitata, James, 491.
    Brachymetopus armatus, Vogdes, 972.
    Brachyphyllum
      crassum n. sp., Lesquereux, 582.
      texense n. sp., Fontaine, 328.
    Branta propinqua n. sp., Shufeldt, 837.
    Bromelia? tenuifolia n. sp., Lesquereux, 582.
    Bronteus manitobensis n. sp., Whiteaves, 1035.
    Bryograptus patens n. sp., Matthew, 653.
    Buccinatrix n. gen., Cragin, 186.
      regina, Cragin, 186.
    Buccinopsis(?) medialis (Conrad), Hill, 435.
    Buchiceras
      inæquiplicatus Shumard, Cragin, 186.
      swallovi Shumard, Cragin, 186.
      swallovi Shumard (sp.), Stanton, 861.

Paleontology—Continued.
  Genera and species described—Continued.
    Bulimulus Leach, Dall, 215.
      (?Anctus)
        americanus Dall, Dall, 215.
        floridanus Conrad (sp.), Dall, 215.
        heilprinianus n. sp., Dall, 215.
        stearnsii Dall, Dall, 215.
    Bulla
      conica n. sp., Whitfield, 1036.
      mortoni, Whitfield, 1036.
      striata Brug. var. attenuata Dall, Dall, 215.
    Bumelia? rhomboidea n. sp., Lesquereux, 582.
    Cæcum
      carolinianum n. sp., Dall, 215.
      coronellum n. sp., Dall, 215.
      floridanum Stimpson, Dall, 215.
        var. compactum Dall, Dall, 215.
      solitarium Meyer, Dall, 215.
      tortile n. sp., Dall, 215.
      (tortile var.?) ibex n. sp., Dall, 215.
    Cœlenterates, Chapman, 134.
    Cadulus floridanus n. sp., Dall, 215.
    Calamites (Eucalamites) ramosus Artis, White, 1022.
    Calamocrinus diomedæ, Agassiz, 5.
    Calandrites n. gen., Scudder, 823.
      cineratius, Scudder, 823.
      defessus, Scudder, 823.
    Calapoecia, James, 491.
      cribriformis, James, 491.
    Calceocrinus indianensis n. sp., Miller, 670.
    Callicrinus beachleri n. sp., Wachsmuth and Springer, 974.
    Calliostoma
      aphelium n. sp., Dall, 215.
      cyclus n. sp., Dall, 215.
      eboreum Wagner, Dall, 215.
      (eboreum Wagner var.?) wagneri Dall, Dall, 215.
      (erosum) n. sp., Dall, 215.
      exile n. sp., Dall, 215.
      grammaticum n. sp., Dall, 215.
      harrisii n. sp., Dall, 215.
      labrosum Conrad, Dall, 215.
      metrium n. sp., Dall, 215.
      nitens Lea, Dall, 215.
      philanthropus Conrad, Dall, 215.
        var. eliminatum Dall, Dall, 215.
      (philanthropus var.?) conradianum Dall, Dall, 215.
      virginicum Conrad, Dall, 215.
      willcoxianum n. sp., Dall, 215.
      (Eutrochus)
        ceramicum n. sp., Dall, 215.
        limulum n. sp., Dall, 215.
    Callista
      (Aphrodina?) tenuis H. and M., Stanton, 861.
      (Dosiniopsis?) orbiculata H. and M., Stanton, 861.
    Callistemophyllum heerii Ett., Lesquereux, 582.
    Calyptraphorus velatus, Whitfield, 1036.
    Camarospira n. gen., Hall, 384.
    Camarella parva (Bill.), Matthew, 653.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Camptonectes platessa White, Stanton, 861.
  - Cancellaria
    - conradiana Dall, var. rotunda, Dall, 215.
    - malachitensis n. sp., Stanton, 861.
    - reticulata Linné, Dall, 215.
    - rudis n. sp., Whitfield, 1036.
    - (Merica) subalta, Whitfield, 1036.
    - (Trigonostoma) sericea n. sp., Dall, 215.
  - Candona
    - subreniformis n. sp., Jones, 506.
    - subovata n. sp., Jones, 506.
  - Canimartes cumminsii Cope, Cope, 183.
  - Carabites exanimus, Scudder, 824.
  - Carcharodon mortoni Gibbes, Lucas, 602.
  - Cardiaster cinctus (Morton), Clark, 139.
  - Cardinocrania Waagen, Hall, 383.
  - Cardiopsis tenuicostata n. sp., Whiteaves, 1035.
  - Cardium
    - pauperculum Meek, Stanton, 861.
    - trite White, Stanton, 861.
  - Caricella
    - plicata n. sp., Whitfield, 1036.
    - podagrina Dall, Dall, 215.
    - ponderosa n. sp., Whitfield, 1036.
    - pyruloides, Whitfield, 1036.
  - Carpites
    - coniger n. sp., Lesquereux, 582.
    - cordiformis n. sp., Lesquereux, 582.
    - obovatus n. sp., Lesquereux, 582.
  - Carpolites, Dawson, 238.
  - Carpolithes (Zamites) meridionalis n. sp., Dawson, 239.
  - Carpolithus
    - harveyi n. sp., Fontaine, 328.
    - obovatus n. sp., Fontaine, 328.
  - Caryocrinus indianensis n. sp., Miller, 670.
  - Cassia
    - polita n. sp., Lesquereux, 582.
    - problematica n. sp., Lesquereux, 582.
  - Cassidaria carinata Lam. ?, Whitfield, 1036.
  - Cassidulus
    - æquoreus Morton, Clark, 139.
    - florealis (Morton), Clark, 139.
    - micrococcus Gabb, Clark, 139.
    - porrectus Clark, Clark, 139.
    - stantoni Clark, Clark, 139.
    - subconicus Clark, Clark, 139.
    - subquadratus Conrad, Clark, 139.
  - Cassis (Phalium) globosum Dall, Dall, 215.
  - Castoroides ohioensis, Moore, 676.
  - Catobaris n. gen., Scudder, 823.
    - cœnosa, Scudder, 823.
  - Catopygus
    - oviformis Conrad, Clark, 139.
    - pusillus Clark, Clark, 139.
  - Cavoscala n. gen, Whitfield, 1036.
    - annulata, Whitfield, 1036.
  - Celastrophyllum
    - crassipes n. sp., Lesquereux, 582.
    - cretaceum n. sp., Lesquereux, 582.
    - decurrens n. sp., Lesquereux, 582.
    - myrsinoides n. sp., Lesquereux, 582.
    - obliquum n. sp., Lesquereux, 582.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Centrinus
    - diruptus, Scudder, 823.
    - obnuptus, Scudder, 823.
  - Centron n. gen., Scudder, 823.
    - moricollis, Scudder, 823.
  - Cerionites dactylioides Owen, Calvin, 110.
  - Cerithiopsis
    - metaxæ Della Chiaje var. tæniolata Dall, Dall, 215.
    - scariphus n. sp., Dall, 215.
  - Cerithium
    - algicola C. B. Adams, Dall, 215.
    - bosquense Shum., Cragin, 186.
    - burnsii, n. sp. Dall, 215.
    - callisoma n. p., Dall, 215.
    - caloosaense, Dall, 215.
    - chipolanum n. sp., Dall, 215.
    - coccodes n. sp., Dall, 215.
    - floridanum Morch, Dall, 215.
    - georgianum Lyell and Sowerby, Dall, 215.
    - glaphyrea n. sp., Dall, 215.
      - var. litharium, Dall, 215.
    - interlineatum n. sp., Cragin, 186.
    - muscarum Say, Dall, 215.
    - ocalanum n. sp., Dall, 215.
    - platynema n. sp., Dall, 215.
    - præcursor Heilprin, Dall, 215.
    - proctori n. sp., Cragin, 186.
    - tramitensis n. sp., Cragin, 186.
    - vinctum, Whitfield, Dall, 215.
    - sp. indet., Dall, 215.
  - Ceuthorhynchus
    - clausus, Scudder, 823.
    - compactus, Scudder, 823.
    - degravatus, Scudder, 823.
    - duratus, Scudder, 823.
    - evinctus, Scudder, 823.
  - Chalicotherium, Osborn, 702, 705.
  - Chamops segnis n. gen. et sp., Marsh, 632.
  - Chara stantoni n. sp., Knowlton, 558.
  - Charionella Billings, Hall, 384.
  - Chemnitzia coalvillensis Meek, Stanton, 861.
  - Chione (?) decepta n. sp., Hill, 435.
  - Chirospongia, James, 491.
    - faberi, James, 491.
  - Chiton (Trachyodon) eocenensis Conrad, Dall, 215.
  - Chonetella Waagen, Hall, 383.
  - Chonetes Fischer de Waldheim, Hall, 383.
    - manitobensis n. sp., Whiteaves, 1035.
  - Chonetina Krotow, Hall, 383.
  - Chonophyllum
    - belli Billings, Sherzer, 836.
    - capax Hall, Sherzer, 836.
    - ellipticum Hall and Whitfield, Sherzer, 836.
    - elongatum Edwards and Haime, Sherzer, 836.
    - greenei n. sp., Sherzer, 836.
    - magnificum Billings, Sherzer, 836.
    - niagarense Hall, sp., Sherzer, 836.
    - perfoliatum Goldfuss, sp., Sherzer, 836.
    - ponderosum Rominger, Sherzer, 836.
    - pseudohelianthoides n. sp., Sherzer, 836.
    - sedaliense White, Sherzer, 836.
    - vadum Hall, Sherzer, 836.

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Genera and species described—Continued.
Chonopectus n. gen., Hall, 383.
Chonostrophia n. gen., Hall, 383.
helderbergia n. sp., Hall, 383.
Christiania n. gen., Hall, 383.
subquadrata n. sp., Hall, 383.
Cicada grandiosa, Scudder, 824.
Cidaris, sp., Cragin, 186.
californicus Clark, 139.
dixiensis n. sp., Cragin, 186.
splendens Morton, Clark, 139.
taylorensis Clark, Clark, 139.
texanus Clark, Clark, 139.
walcotti Clark, Clark, 139.
Cimolodon
agilis n. sp., Marsh, 632.
parvus n. sp., Marsh, 632.
Cimolopteryx Marsh, Marsh, 635.
Cinnamomum
ellipsoideum Sap. & Mar., Lesquereux, 582.
ellipticum n. sp., Knowlton, 559.
heeri Lesq., Lesquereux, 582.
marioni n. sp., Lesquereux, 582.
scheuchzeri Heer, Lesquereux, 582.
sezannense Watelet, Dawson, 239.
sezannense Watelet, Lesquereux, 582.
Cinulia
ovoidea, Whitfield, 1036.
tarrantensis n. sp., Cragin, 186.
(Oligoptycha) naticoides, Whitfield, 1036.
Cissites
acerifolius n. sp., Lesquereux, 582.
alatus n. sp., Lesquereux, 582.
brownii Lesq., Lesquereux, 582.
dentato-lobatus n. sp., Lesquereux, 582.
formosus Heer, Lesquereux, 582.
ingens n. sp., Lesquereux, 582.
var. parvifolia n. var., Lesquereux, 582.
obtusilobus n. sp., Lesquereux, 582.
populoides n. sp., Lesquereux, 582.
Cithara
crosswickensis n. sp., Whitfield, 1036.
mullicænsis n. sp., Whitfield, 1036.
Cladodus
clarki, Claypole, 154.
kepleri, Claypole, 154.
rivi-petrosi, Claypole, 154.
sinuatus, Claypole, 154.
Cladophlebis
columbiana n. sp., Dawson, 239.
falcata, Dawson, 238.
Claosaurus, Marsh, 635, 639.
annectens n. sp., Marsh, 633.
Clava
caloosænsis n. sp., Dall, 215.
chipolana n. sp., Dall, 215.
Clavella raphanoides ?, Whitfield, 1036.
Cleidophorus consuetus n. sp., Ulrich, 940.
Cleionychia rhomboidea n. gen. et sp., Ulrich, 937.
Cleonus
degeneratus, Scudder, 823.
exterraneus, Scudder, 823.
foersteri, Scudder, 823.
primoris, Scudder, 823.

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Genera and species described—Continued.
Climacograptus James, 491.
bicornis James, 491.
typicalis James, 491.
Clintonella n. gen., Hall, 384.
Cliothyris see Athyris
(Cliothyris) King, Hall, 384.
Clitambonites Pander, Hall, 383.
Clonograptus (?) spinosus n. sp., Matthew, 653.
Clymenia, Clarke, 148.
Coccosteus
canadensis n. sp., Woodward, 1101.
cuyahogæ, Claypole, 153.
macromus n. sp., Cope, 179.
Coccotorus
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Collonia
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elegantula n. sp., Dall, 215.
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Coloceras n. gen., Hyatt, 478.
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calicina, James, 491.
(?) halli, James, 491.
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Coniatus
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Conocardium
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indianense n. sp., Miller, 670.
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      subsaurideus, Whitfield, 1036.
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    Coptosoma
      mortoni (de Loriol), Clark, 139.
      speciosum Clark, Clark, 139.
    Coralliophila
      abbreviata Lamarck, Dall, 215.
      lepidota n. sp., Dall, 215.
      magna n. sp., Dall, 215.
    Corbula
      kanabensis n. sp., Stanton, 861.
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      subtrigonalis M. and H., Stanton, 861.
    Cordaicarpus lineatus Lx., White, 1022.
    Cordaites communis Lx., White, 1022.
    Cordania, Clarke, 149.
    Cornus
      obesus n. sp., Dawson, 239.
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    Coronura aspectans Conrad sp., Clarke, 145.
    Corvus annectens n. gen., Shufeldt, 837.
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      curvicristis Cope, Earle, 381.
      cuspidatus Cope, Earle, 281.
      elephantus Cope, Earle, 281.
      hamatus Marsh, Earle, 281.
      obliquus Cope, Earle, 281.
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    Cossonus
      gabbii, Scudder, 823.
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    Crania
      agaricina n. sp., Hall, 383.
      favincola n. sp., Hall, 383.
      granosa n. sp., Hall, 383.
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    Craniella Œhlert, Hall, 383.
      ulrichi n. sp., Hall, 383.
    Crassatella excavata n. sp., Stanton, 861.
    Cratægus
      aceroides n. sp., Lesquereux, 582.
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    Cratoparis arcessitus, Scudder, 823.
    Crecoides
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    Creseis
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    Cryptorhynchus
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      durus, Scudder, 823.
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    Cryptozoon minnesotense, Chaney, 125.
    Ctenacanthus amblyxiphias n. sp., Cope, 170.
    Ctenopyge acadica n. sp., Matthew, 654.
    Cucullæa
      comanchensis n. sp., Hill, 435.
      gracilis n. sp., Cragin, 186.
      gratioti Hill, Cragin, 186.
      terminalis Con., Cragin, 186.
      tippana Con., Cragin, 186.
      transpecosensis n. sp., Cragin, 186.
    Cuneamya sulcodorsata n. sp., Ulrich, 940.
    Cyathocrinus
      benedicti n. sp., Miller, 670.
      gurleyi n. sp., Miller, 670.
      labyrinthicus n. sp., Miller, 670.
      opimus n. sp., Miller and Gurley, 673.
      viminalis, Whitfield, 1037.
    Cyathophycus siluriana n. sp., James, 491.
    Cyathophyllum
      petraloides n. sp., Whiteaves, 1035.
      waskasense n. sp., Whiteaves, 1035.
    Cycadeospermum
      columnare n. sp., Lesquereux, 582.
      lineatum n. sp., Lesquereux, 582.
      rotundatum Font., Fontaine, 328.
    Cycadites pungens n. sp., Lesquereux, 582.
    Cyclocystoides cincinnatiensis n. sp., Miller and Faber, 672.
    Cyclognathus rotundifrons Matt., Matthew, 653.
    Cyclospira n. gen., Hall, 384.
    Cyclospongia discus n. gen. et sp., Miller, 670.
    Cyclostrema chipolanum n. sp., Dall, 215.
    Cylichna recta, Whitfield, 1036.
    Cylindrella floridana n. sp., Dall, 215.
    Cylindrites formosus n. sp., Cragin, 186.
    Cylindrœcelia, James, 491.
      covingtonensis James, 491.
    Cymba (Eucymba) Dall, Dall, 215.
    Cyperites, Dawson, 238.
    Cyphaspis bellula n. sp., Whiteaves, 1035.
    Cyphosoma volanumn. sp., Cragin, 186.
    Cypræa
      heilprinii n. sp., Dall, 215.
      pinguis Conrad, Dall, 215.
      sabuloviridis n. sp., Whitfield, 1036.
      willcoxi n. sp., Dall, 215.
      (Aricia) mortoni, Whitfield, 1036.
      (Siphocypræa) Heilprin, Dall, 215.
        problematica Heilprin, Dall, 215.
    Cypricardella
      gorbyi n. sp., Miller, 670.
      producta n. sp., Whiteaves, 1035.
    Cypricardites
      cingulata n. sp., Ulrich, 940.
      germanus n. sp. or var., Ulrich, 940.
      glabellus n. sp., Ulrich, 940.
      haynianus?, Safford, Ulrich, 940.

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- *Genera and species described*—Continued.
  - Cypricardites
    - modestus n. sp., Ulrich, 937.
    - nanus n. sp., Ulrich, 940.
    - obtusifrons n. sp., Ulrich, 940.
    - oviformis n. sp., Ulrich, 937.
    - sardesoni n. sp., Ulrich, 940.
    - tenellus n. sp., Ulrich, 940.
    - terminalis n. sp., Ulrich, 937.
  - Cypridea
    - texana n. sp., Hill, 435.
    - tuberculata var. wyomingensis nov., Jones, 506.
  - Cyprimeria
    - crassa Mk., Cragin, 186.
    - excavata (Mort.), Cragin, 186.
    - gigantea n. sp., Cragin, 186.
    - texana, Roem., Cragin, 186.
  - Cyprina
    - mediale Con., Cragin, 186.
    - roemeri n. sp., Cragin, 186.
    - texana Con., Cragin, 186.
    - (?Roudairia) streeruwitzi n. sp., Cragin, 186.
  - Cyprinidæ, Cope, 176.
  - Cypris purbeckinsis, Jones, 506.
  - Cyrena
    - æquilateralis Meek?, Stanton, 861.
    - inflexa Meek, Stanton, 861.
    - (Veloritina) securis Meek, Stanton, 861.
  - Cyrtia Dalman, Hall, 384.
    - burlingtonensis n. sp., Rowley, 790.
  - Cyrtoceras
    - indianense n. sp., Miller, 670.
    - luthei n. sp., Calvin, 112.
    - nashvillense n. sp., Miller, 670.
    - saffordi n. sp., Miller, 670.
    - (Glyptodendron) eatonense, Foerste, 324.
  - Cyrtolithes atlantoides n. sp., Matthew, 654.
  - Cystelasma lanesvillense n. gen. et sp., Miller, 670.
  - Cythara terminula n. sp., Dall, 215.
  - Cythere monticula n. sp., Jones, 506.
  - Cytherea
    - lamarensis Shum., Cragin, 186.
    - leveretti n. sp., Cragin, 186.
    - taffi n. sp., Cragin, 186.
  - Cytheridea
    - tenuis n. sp., Jones, 506.
    - truncata n. sp., Jones, 506.
  - Cytherideis
    - æqualis n. sp., Jones, 506.
    - impressa n. sp., Jones, 506.
  - Dactyloporus archæus, Herzer, 424.
  - Daimonelix
    - anaxilis, Barbour, 29.
    - bispiralis, Barbour, 29.
    - carinati, Barbour, 29.
    - circumaxilis, Barbour, 29.
    - robusta, Barbour, 29.
  - Dalmanella, Hall, 383.
  - Dammarites
    - caudatus Lesq., Lesquereux, 582.
    - dubius n. sp., Dawson, 239.
    - emarginatus Lesq., Lesquereux, 582.

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- *Genera and species described*—Continued.
  - Daphnella
    - cingulata n. sp., Dall, 215.
    - elata Dall, Dall, 215.
    - modesta n. sp., Dall, 215.
  - Daphnophyllum
    - angustifolium n. sp., Lesquereux, 582.
    - dakotense n. sp., Lesquereux, 582.
  - Davidsonia Bouchard, Hall, 383.
  - Daviesiella Waagen, Hall, 383.
  - Dawsonia, James, 491.
    - siliquaria, James, 491.
  - Dayia Davidson, Hall, 384.
  - Delocrinus n. gen., Miller and Gurley, 673.
    - hemisphericus Shumard, Miller and Gurley, 673.
    - missouriensis n. sp., Miller and Gurley, 673.
  - Dendrograptus, James, 491.
    - gracillimum, James, 491.
    - tenuiramosus, James, 491.
  - Dentalium
    - caduloide n. sp., Dall, 215.
    - caloosaense n. sp., Dall, 215.
    - prisma n. sp., Dall, 215.
    - ripleyanum, Whitfield, 1036.
    - subarcuatum, Whitfield, 1036.
    - (Falcula) falcatum, Whitfield, 1036.
  - Derbya Waagen, Hall, 383.
    - affinis n. sp., Hall, 383.
    - bennetti n. sp., Hall, 383.
    - biloba n. sp., Hall, 383.
    - broadheadi n. sp., Hall, 383.
    - costatula n. sp., Hall, 383.
    - cymbula n. sp., Hall, 383.
    - ruginosa n. sp., Hall, 383.
  - Desmoceras
    - affine n. sp., Whiteaves, 1032.
      - var. glabrum, Whiteaves, 1032.
    - athabascense n. sp., Whiteaves, 1032.
  - Dewalquea dakotensis n. sp., Lesquereux, 582.
  - Diatomaceæ, Edwards, 286.
  - Dibelodon
    - humboldtii Cuvier, Cope, 183.
    - præcursor Cope, Cope, 183.
    - tropicus Cope, Cope, 183.
  - Dichocrinus
    - blairi n. sp., Miller, 670.
    - cinctus n. sp., Miller and Gurley, 673.
    - humbergi, Miller, 670.
    - ulrichi n. sp., Miller and Gurley, 673.
  - Dichograptus
    - logani Hall, Matthew, 653.
    - nitidus (Hall), var., Matthew, 653.
  - Dicranograptus, James, 491.
    - ramosus, James, 491.
  - Dicranopora parva n. sp., Ami, 12.
  - Dictyonema, James, 491.
    - arbusculum, James, 491.
    - delicatulum Dawson, var., Matthew, 653.
  - Dictyopteris squarrosa Ett. sp., White, 1022.
  - Dictyorhabdus priscus n. gen. et sp., Walcott, 980.
  - Didymictis Cope, Osborn and Wortman, 690.

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Dillwynella naticoides Lea, Dall, 215.
Dinichthys, Claypole, 151.
  canadensis n. sp., Whiteaves, 1035.
  clarki, Claypole, 156.
  gracilis, Claypole, 156.
  lincolni, Claypole, 156.
Dinobolus Hall, Hall, 383.
Dinorthis, Hall, 383.
Dioonites
  buchianus Schimper, Fontaine, 328.
  buchianus var. angustifolius Font., Fontaine, 328.
  buchianus var. rarinervis, n. var., Fontaine, 328.
  dunkerianus, Fontaine, 328.
Diorugoceras n. gen., Hyatt, 478.
Diospyros
  apiculata n. sp., Lesquereux, 582.
  calyx Dawson, 239.
  celastroides n. sp., Lesquereux, 582.
  eminens n. sp., Dawson, 239.
  primæva Heer, Lesquereux, 582.
  pseudoanceps Lesq., Lesquereux, 582.
  rotundifolia Lesq., Lesquereux, 582.
  steenstrupi Heer, Lesquereux, 582.
  vancouverensis Dn., Dawson, 239.
Diplacanthus horridus n. sp., Woodward, 1101.
Diploconcha (Serpula?) cretacea?, Whitfield, 1036.
Diplograptus, James, 491
  spinulosus, James, 491.
  whitfieldi, James, 491.
Diplopodia
  hilli Clark, Clark, 139.
  hilli Clark, Cragin, 186.
  streeruwitzii n. sp., Cragin, 186.
  taffi n. sp., Cragin, 186.
  texana Roem., Cragin, 186.
  texanum (Roemer), Clark, 139.
Diplothemema geniculatum (Germ. et Kaulf.) Stur., White, 1022.
Diplotrypa quebecensis n. sp., Ami, 12.
Discina Lamarck, Hall, 383.
  sampsoni n. sp., Miller, 670.
Disciniscа Dall, Hall, 383.
Discinolepis Waagen, Hall, 383.
Discinopsis (Matthew) n. gen, Hall, 383.
Discitoceras, Hyatt, 478.
Discohelix retifera n. sp., Dall, 215.
Dissacus leptognathus n. sp., Osborn and Wortman, 707.
Docirhynchus n. gen., Scudder, 823.
  culex, Scudder, 823.
  terebrans, Scudder, 823.
Dolabella aldrichi n. sp., Dall, 215.
  Dolium (Doliopsis?) multiliratum n. sp., Whitfield, 1036.
Domatoceras
  militarium n. sp., Hyatt, 478.
  simplex n. sp., Hyatt, 478.
  umbilicatum, n. sp., Hay, 404.
Donax
  cuneata n. sp., Stanton, 861.
  oblonga n. sp., Stanton, 861.

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Genera and species described—Continued.
Dorycrinus, Whitfield, 1037.
  tricornis, Whitfield, 1037.
Dorytomus
  coercitus, Scudder, 823.
  williamsi, Scudder, 823.
Drillia
  abundans Conrad, Dall, 215.
  abundans var. perrugata, Dall, 215.
  acucincta n. sp., Dall, 215.
  acurugata n. sp., Dall, 215.
  æpynota Dall var. acila, Dall, 215.
  alesidota var. perspirata Dall, Dall, 215.
  aphanitoma n. sp., Dall, 215.
  bigemma n. sp., Dall, 215.
  ebenina Dall, Dall, 215.
  eburnea Conrad, Dall, 215.
  edilia n. sp., Dall, 215.
  hoplophorus n. sp., Dall, 215.
  (lissotropis var.?) perpolita Dall, Dall, 215.
    scissurata Dall, Dall, 215.
  myrmecoon n. sp., Dall, 215.
  newmani n. sp., Dall, 215.
  ostrearum Stearns, Dall, 215.
  piscator n. sp., Dall, 215.
  podagrina n. sp., Dall, 215.
  schismatica n. sp., Dall, 215.
  sodilia n. sp., Dall, 215.
  sigela n. sp., Dall, 215.
  tuberculata Emmons, Dall, 215.
Dryophyllum
  elongatum n. sp., Dawson, 239.
  neillianum n. sp., Dawson, 239.
  occidentale n. sp., Dawson, 239.
Dumblea n. gen., Cragin, 186.
  symmetrica n. sp., Cragin, 186.
Dystactospongia, James, 491.
  insolens, James, 491.
  minima, James, 491.
Echinobrissus
  expansus Clark, Clark, 139.
  texanus Clark, Clark, 139.
  texanus Clark, Cragin, 186.
Echinoderms, Agassiz, 10.
Echinodiscus sampsoni n. sp., Miller, 670.
Ecphora Conrad, Dall, 215.
Ectacodon cinctus Cope, Earle, 281.
Elæodendron speciosum n. sp., Lesquereux, 582.
Elephas primigenius Blum, Cope, 183.
Elkania Ford, Hall, 383.
Ellipsocephalus
  articephalus Matt., Matthew, 649, 654.
  galeatus n. sp., Matthew, 649, 654.
  grandis n. sp., Matthew, 654.
Elotherium
  clavum n. sp., Marsh, 642.
  crassum, Marsh, 642.
  mortoni Leidy, Ami, 18.
Emarginula
  pilsbryi n. sp., Dall, 215.
  (Rimula) caroliniana n. sp., 215.
Enallaster
  inflatus n. sp., Cragin, 186.
  obliquatus Clark, Clark, 139.

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- Enallaster
  - texanus (Roemer), Clark, 139.
  - texanus Roem., Cragin, 186.
- Encephalartos cretaceus n. sp., Lesquereux, 582.
- Endoptygma umbilicata, Whitfield, 1036.
- Engina turbinella Kiener, Dall, 215.
- Enteletes Fischer de Waldheim, Hall, 383.
- Eocidaris blairi n. sp., Miller, 670.
- Eocleonus n. gen., Scudder, 823.
  - subjectus, Scudder, 823.
- Epiaster
  - electus n. sp., Cragin, 186.
  - elegans Shum., Cragin, 186.
    - var. nov. prænuntius, Cragin, 186.
  - elegans (Shumard), Clark, 139.
  - hemiasterinus n. sp., Cragin, 186.
  - whitei Clark, Clark, 139.
  - whitei Clark, Cragin, 186.
- Epicærus
  - effossus, Scudder, 823.
  - exanimis, Scudder, 823.
  - saxatilis, Scudder, 823.
- Episcoposaurus haplocerus n. sp., Cope, 182.
- Equisetum lyelli Mantel, Dawson, 238.
  - texense n. sp., Fontaine, 328.
- Equus
  - cumminsii Cope, Cope, 183.
  - eurystylus Cope, Cope, 183.
  - excelsus, Cope, 171.
  - excelsus Leidy, Cope, 183.
  - major Dekay, Cope, 183.
  - minutus Cope, Cope, 183.
  - semiplicatus Cope, Cope, 183.
  - simplicidens n. sp., Cope, 182, 183.
  - tau Owen, Cope, 183.
- Erato maugeriæ Gray, Dall, 215.
- Eretmocrinus
  - attenuatus, Whitfield, 1037.
  - lyonanus n. sp., Miller, 670.
- Eripachya? paludinaformis n. sp., Whitfield, 1036.
- Eriptychius americanus n. sp., Walcott, 980.
- Erirhinus dormitus, Scudder, 823.
- Erycus brevicollis, Scudder, 823.
- Etheridgina Oehlert, Hall, 383.
- Etoblattina
  - clarkii, Scudder, 826.
  - exilis, Scudder, 826.
  - gorhami, Scudder, 826.
  - illustris, Scudder, 826.
  - reliqua, Scudder, 826.
  - scholfieldi, Scudder, 826.
- Eucalyptocrinus
  - ellipticus n. sp., Miller, 670.
  - elrodi n. sp., Miller, 670.
  - gorbyi n. sp., Miller, 670.
  - lindahli n. sp., Wachsmuth and Springer, 974.
  - subglobosus n. sp., Miller, 670.
- Eucalyptus
  - dakotensis n. sp., Lesquereux, 582.
  - geinitzi Heer, Lesquereux, 582.
- Eucryptus n. gen., Scudder, 823.
  - sectus, Scudder, 823.

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- Eucymba ocalana Dall, Dall, 215.
- Eucymba, see Cymba (Eucymba) Dall, Dall, 215.
- Eudomus n. gen., Scudder, 823.
  - pinguis, Scudder, 823.
  - robustus, Scudder, 823.
- Eugenia primæva n. sp., Lesquereux, 582.
- Eugnamptus grandævus, Scudder, 823.
- Eulima
  - conoidea Kurtz & Stimpson, Dall, 215.
  - (Leiostraca) rectiuscula Dall, Dall, 215.
- Eulimella? funicula Meek, Stanton, 861.
- Eumetria Hall, Hall, 384.
- Eunema
  - brevispera n. sp., Whiteaves, 1035.
  - clathratulum n. sp., Whiteaves, 1035.
  - speciosum n. sp., Whiteaves, 1035.
  - subspinosum n. sp., Whiteaves, 1035.
- Euomphalus (circularis? Phillips, var.) subtrigonalis, Whiteaves, 1036.
- Eupachycrinus
  - harii n. sp., Miller, 670.
  - magister, Miller and Gurley, 673.
  - orbicularis, Whitfield, 1037.
  - sphæralis, n. sp., Miller and Gurley, 673.
  - tumulosus n. sp., Miller, 670.
- Eupleura
  - caudata Say, Dall, 215.
    - var. sulcidentata Dall, Dall, 215.
  - miocenica n. sp., Dall, 215.
  - muriciniformis Broderip, Dall, 215.
- Euthria? fragilis n. sp., Whitfield, 1036.
- Evopes n. gen., Scudder, 823.
  - occubatus, Scudder, 823.
  - veneratus, Scudder, 823.
- Exogyra
  - americana Marcou, Cragin, 186.
  - columbella Meek, Cragin, 186.
  - columbella Meek, Stanton, 861.
  - drakei n. sp., Cragin, 186.
  - ferox n. sp., Cragin, 186.
  - hilli n. sp., Cragin, 186.
  - læviuscula Roemer, Cragin, 186.
  - læviuscula Roemer, Stanton, 861.
  - paupercula n. sp., Cragin, 186.
  - plexa n. sp., Cragin, 186.
  - ponderosa Roemer, Stanton, 861.
  - suborbiculata Lamarck (sp.), Stanton, 861.
  - weatherfordensis n. sp., Cragin, 186.
- Exomias obdurefactus, Scudder, 823.
- Fagophyllum
  - nervosum n. sp., Dawson, 239.
  - retosum n. sp., Dawson, 239.
- Fagus orbiculatum n. sp., Lesqureux, 582.
- Fasciolaria
  - distans Lamarck, Dall, 215.
  - elegans Emmons, Dall, 215.
  - hercules, Whitfield, 1036.
  - propinqua n. sp., Whitfield, 1036.
  - sampsoni n. sp., Whitfield, 1036.
  - (sparrowi var.?) acuta Emmons, Dall, 215.
  - tulipa Linné, Dall, 215.
  - walcotti n. sp., Stanton, 861.
  - (Cryptorhytis) utahensis Meek (sp.), Stanton, 861.

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    Fasciolaria
      (distans subsp?)
        apicina Dall, Dall, 215.
        monocingulata Dall, Dall, 215.
        rhomboidea Rogers, Dall, 215.
    Favia taxana n. sp., Cragin, 186.
    Favositidæ, Beecher, 57.
    Felis
      hillanus Cope, Cope, 183.
      probiscidia, Cope, 183.
    Ficus
      aligera n. sp., Lesquereux, 582.
      berthoudi n. sp., Lesquereux, 582.
      contorta n. sp., Dawson, 239.
      crassipes Heer, Lesquereux, 582.
      deflexa n. sp., Lesquereux, 582.
      glascœna Lesq., Lesquereux, 582.
      inæqualis n. sp., Lesquereux, 582.
      kransiana Heer, Lesquereux, 582.
      laurophyllidia n. sp., Dawson, 239.
      lanceolato-acuminata Ett., Lesquereux, 582.
      macrophylla n. sp., Lesquereux, 582.
      magnolifolia Lesq., Dawson, 239.
      magnoliæfolia Lesq., Lesquereux, 582.
      melanophylla n. sp., Lesquereux, 582.
      mudgei n. sp., Lesquereux, 582.
      penitus?, Whitfield, 1036.
      præcursor n. sp., Lesquereux, 582.
      precedens n. sp., Whitfield, 1036.
      proteoides n. sp., Lesquereux, 582.
      rotundata n. sp., Dawson, 239.
      sternbergii n. sp., Lesqureux, 582.
      undulata n. sp., Lesquereux, 582.
      wellingtonæ n. sp., Dawson, 239.
    Fissuridea
      caloosænsis n. sp., Dall, 215.
      carditella n. sp., Dall, 215.
      carolinensis, Conrad, Dall, 215.
      chipolana n. sp., Dall, 215.
      nucula n. sp., Dall, 215.
    Foordiceras n. gen., Hyatt, 478.
    Forbesocrinus speciosus n. sp., Miller and Gurley, 673.
    Fossarus (Isapis) anomala C. B. Adams, Dall, 215.
    Frenelopsis
      hoheneggeri, Fontaine, 328.
      varians n. sp., Fontaine, 328.
    Fulgur
      echinatum n. sp., Dall, 215.
      maximum Conrad, Dall, 215.
      perversum Linné, Dall, 215.
      pyrum var. æpynotum, Dall, 215.
      (pyrum var.?) planulatum n. sp., Dall, 215.
      scalarispira Conrad, Dall, 215.
      spiniger Conrad, Dall, 215.
      stellatum n. sp., Dall, 215.
    Fulica minor n. sp., Shufeldt, 837.
    Fusus
      angularis n. sp., Whitfield, 1036.
      ballista n. sp., Dall, 215.
      burnsii Dall, Dall, 215.
      caloosænsis Heilprin, Dall, 215.

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  Genera and species described—Continued.
    Fusus
      eocenicus n. sp., Whitfield, 1036.
      equalis Emmons, Dall, 215.
      gabbi Meek, Stanton, 861.
      graysonensis n. sp., Cragin, 186.
      hector n. sp., Whitfield, 1036.
      hector var. multilineatus n. var., Whitfield, 1036.
      holmdelensis n. sp., Whitfield, 1036.
      paucicostatus n. sp., Whitfield, 1036.
      perobesus n. sp., Whitfield, 1036.
      pluricostatus n. sp., Whitfield, 1036.
      quinquespinus n. sp., Dall, 215.
      shumardi H. and M., Stanton, 861.
      sp. undet., Dall, 215.
      (Chrysodomus?) nexilis n. sp., Dall, 215.
      (Neptunea?)
        staminea, Whitfield, 1836.
        venenatus n. sp., Stanton, 861.
      (Urosalpinx?) multicostatus n. sp., Stanton, 861.
    Galla quercina n. sp., Lesquereux, 582.
    Ganorhynchus oblongus n. sp., Cope, 179.
    Gastrioceras entogonum?, Hyatt, 478.
    Gerablattina
      fraterna, Scudder, 826.
      scapularis, Scudder, 826.
    Geralophus n. gen., Scudder, 823.
      antiquarius, Scudder, 823.
      discessus, Scudder, 823.
      fossicius, Scudder, 823.
      lassatus, Scudder, 823.
      occultus, Scudder, 823.
      pumiceus, Scudder, 823.
      repositus, Scudder, 823.
      retritus, Scudder, 823.
      saxnosus, Scudder, 823.
    Gervillia propleura (Meek), Stanton, 861.
    Gervilliopsis invaginata (White), Cragin, 186.
    Gibbula americana n. sp., Dall, 215.
    Girvanella richmondensis, James, 491.
      labyrinthica, James, 491.
    Glæocapsa, Rothpletz, 786.
    Glandina truncata var. macer, Dall, 215.
    Glassia Davidson, Hall, 384.
    Glauconia coalvillensis (Meek), Stanton, 861.
    Globiconcha (Tylostoma) curta, Whitfield, 1036.
    Glossites manitobensis (nom. prov.), Whiteaves, 1035.
    Glyphioceras
      cumminsi n. sp., Hyatt, 478.
      incisum n. sp., Hyatt, 478.
    Glyphostoma
      johnsoni n. sp., Dall, 215.
      watsoni n. sp., Dall, 215.
    Glyptostyla panamensis n. sp., Dall, 215.
    Gomphoceras clarki n. sp., Miller, 670.
    Goniaster mammillata Gabb, Clark, 139.
    Goniasteroidocrinus tuberosus, Miller, 670.
    Goniatites
      brownensis n. sp., Miller, 670.
      gorbyi n. sp., Miller, 670.
      indianensis n. sp., Miller, 670.

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- *Genera and species described*—Continued.
  - Goniatites
    - leviculus n. sp., Miller and Faber, 671.
    - limatus n. sp., Miller and Faber, 671.
    - missouriensis n. sp., Miller and Faber, 671.
    - occidentalis n. sp., Miller and Faber, 671.
    - sciotoensis n. sp., Miller and Faber, 671.
  - Goniocrinus sculptilis n. gen. et sp., Miller and Gurley, 673.
  - Goniopygus
    - zitteli Clark, Clark, 139.
    - zitteli Clark, Cragin, 186.
  - Grammysia blairi n. sp., Miller, 670.
  - Granatocrinus mutabilis n. sp., Rowley, 790.
  - Graphiocrinus tortuosus, Whitfield, 1037.
  - Graptolithus, James, 491.
  - Grewiopsis
    - æquidentata n. sp., Lesquereux, 582.
    - mudgei n. sp., Lesquereux, 582.
  - Gruenewaldtia, see Atrypa (Gruenewaldtia) Tschernyschew, Hall, 384.
  - Gryphæa
    - gibberosa n. sp., Cragin, 186.
    - newberryi n. sp., Stanton, 861.
  - Grypidius corcirostris, Scudder, 823.
  - Gymnetron antecurrens, Scudder, 823.
  - Gyrodes
    - abbotti, Whitfield, 1036.
    - altispira, Whitfield, 1036.
    - conradi Meek, Stanton, 861.
    - crenata, Whitfield, 1036.
    - depressa Meek, Stanton, 861.
    - infracarininata, Whitfield, 1036.
    - obtusivolva, Whitfield, 1036.
    - petrosus, Whitfield, 1036.
  - Hallina n. gen., Winchell and Schuchert, 1081.
    - nicolleti, Winchell and Schuchert, 1081.
    - saffordi, Winchell and Schuchert, 1081.
  - Haminea truncata n. sp., Stanton, 861.
  - Hebertella, Hall, 383.
  - Hedera
    - cretacea n. sp., Lesquereux, 582.
    - decurrens n. sp., Lesquereux, 582.
    - microphylla n. sp., Lesquereux, 582.
    - orbiculata (Heer) Lesq., Lesquereux, 582.
    - ovalis Lesq., Lesquereux, 582.
    - plantanoidea Lesq., Lesquereux, 582.
  - Helcion? tentorium, Whitfield, 1036.
  - Helicina
    - ballista n. sp., Dall, 215.
      - var. tampæ Dall, Dall, 215.
  - Heliococeras
    - corrugatum n. sp., Stanton, 861.
    - pariense White, Stanton, 861.
  - Heliolites, James, 491.
    - shepardi, James, 491.
  - Helix
    - adamnis n. sp., Dall, 215.
    - crusta n. sp., Dall, 215.
    - crusta var. cunctator Dall, Dall, 215.
    - diespiter n. sp., Dall, 215.
    - direpta n. sp., Dall, 215.
    - haruspica n. sp., Dall, 215.
    - instrumosa n. sp., Dall, 215.

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- *Genera and species described*—Continued.
  - Helix
    - latebrosa n. sp., Dall, 215.
    - Linné (Hygromia Risso), Dall, 215.
  - Helmersenia Pander, Hall, 383.
  - Hemiaster
    - californicus Clark, Clark, 139.
    - calvini Clark, Clark, 139.
    - dalli Clark, Clark, 139.
    - humphreysanus Meek and Hayden, Clark, 139.
    - parastatus (Morton), Clark, 139.
    - stella (Morton), Clark, 139.
    - texanus Roemer, Clark, 139.
    - texanus Roemer, Cragin, 186.
    - ungula (Morton), Clark, 139.
  - Hemicidaris intumescens Clark, Clark, 139.
  - Heptodon calciculus Cope, Osborn and Wortman, 707.
  - Hercoglossa paucifex, Whitfield, 1036.
  - Heteroceras conradi, Whitfield, 1036.
  - Heterocrinus subcrassus, Dyche, 278.
  - Heterorthis, Hall, 383.
  - Heterospongia, James, 491.
    - aspera, James, 491.
    - subramosa, James, 491.
  - Hindella Davidson, Hall, 384.
  - Hindia, James, 491.
  - Hipparionyx Vanuxen, Hall, 383.
  - Hippidium
    - interpolatum Cope n. sp., Cope, 183.
    - ? spectans Cope, Cope, 183.
  - Hipponicharion
    - cavatum n. sp., Matthew, 654.
    - minus n. sp., Matthew, 654.
  - Hippurites flabellifer n. sp., Cragin, 186.
  - Holaster
    - completus n. sp., Cragin, 186.
    - nanus n. sp., Cragin, 186.
    - simplex Shumard, Clark, 139.
    - simplex Shumard, Cragin, 186.
    - supernus n. sp., Cragin, 186.
  - Holectypus
    - charltoni n. sp., Cragin, 186.
    - planatus Roemer, Clark, 139.
    - planatus Roemer, Cragin, 186.
    - transpecosensis n. sp., Cragin, 186.
  - Holocraspedum n. gen., Cragin, 186.
  - Holocystites
    - adipatus n. sp., Miller, 670.
    - affinis n. sp., Miller and Faber, 672.
    - benedicti n. sp., Miller, 670.
    - colletti n. sp., Miller, 670.
    - commodus n. sp., Miller, 670.
    - gorbyi n. sp., Miller, 670.
    - indianensis n. sp., Miller, 670.
    - madisonensis n. sp., Miller, 670.
    - ornatissimus n. sp., Miller, 670.
    - papulosus n. sp., Miller, 670.
    - parvulus n. sp., Miller, 670.
    - parvus n. sp., Miller, 670.
    - scitulus n. sp., Miller, 670.
    - spangleri n. sp., Miller, 670.
    - subovatus n. sp., Miller, 670.
    - wykoffi n. sp., Miller, 670.

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- *Genera and species described*—Continued.
  - Holomeniscus
    - macrocephalus Cope, Cope, 183.
    - sulcatus Cope, Cope, 183.
  - Holonema, Williams, 1052.
    - horrida n. sp., Cope, 179.
    - rugosa Clayp., Cope, 179.
  - Holoptychius filosus n. sp., Cope, 179.
  - Homomya
    - jurafacies n. sp., Cragin, 186.
    - solida n. sp., Cragin, 186.
  - Hoplites
    - canadensis n. sp., Whiteaves, 1032.
    - haidaquensis n. sp., Whiteaves, 1030.
    - mcconnelli n. sp., Whiteaves, 1032.
    - roemeri n. sp., Cragin, 186.
    - texanus n. sp., Cragin, 186.
  - Hormorus saxorum, Scudder, 823.
  - Hustedia n. gen., Hall, 384.
  - Hyattella n. gen., Hall, 384.
  - Hybodus regularis n. sp., Cope, 170.
  - Hydreionocrinus pentagonus n. sp., Miller and Gurley, 673.
  - Hydrobia
    - amnicoloides Pilsbry n. sp., Dall, 215.
    - mobiliana Dall n. sp., Dall, 215.
    - umbilicata Pilsbry n. sp., Dall, 215.
  - Hylobius
    - lacoei, Scudder, 823.
    - packardii, Scudder, 823.
  - Hymenæa dakotana n. sp., Lesquereux, 582.
  - Hyolithellus micans Billings, Matthew, 654.
  - Hyolithes
    - alatus n. sp., Whiteaves, 1035.
    - decipiens n. sp., Matthew, 654.
    - cf. obesus Holm, Matthew, 654.
  - Hyptiocrinus typus W. and Sp. n. gen. et sp., Wachsmuth and Springer, 974.
  - Ichthyocrinus burlingtonensis, Whitfield, 1037.
  - Ichthyodectes
    - anaides Cope, Crook, 192.
    - polymicrodus Cope, Crook, 192.
  - Idiocrinus
    - elongatus W. and Sp. n. gen. et sp., Wachsmuth and Springer, 974.
    - ventricosus W. and Sp. n. sp., Wachsmuth and Springer, 974.
  - Iguanavus teres n. sp., Marsh, 633.
  - Ilex
    - armata n. sp., Lesquereux, 582.
    - borealis Heer, Lesquereux, 582.
    - dakotensis n. sp., Lesquereux, 582.
    - masoni n. sp., Lesquereux, 582.
    - papillosa n. sp., Lesquereux, 582.
    - scudderi n. sp., Lesquereux, 582.
  - Ilyanassa
    - granifera Conrad, Dall, 215.
    - irrorata Conrad, Dall, 215.
    - (porcina var.?) schizopyga, Dall, 215.
    - (Paranassa)
      - arata Say, Dall, 215.
      - isogramma n. sp., Dall, 215.
      - porcina Say, Dall, 215.
  - Incolaria securiformis n. gen. et sp., Herzer, 422.

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- *Genera and species described*—Continued.
  - Inga cretacea n. sp., Lesquereux, 582.
  - Inocaulis, James, 491.
  - Inoceramus
    - cumminsi n. sp., Cragin, 186.
    - deformis Meek, Stanton, 861.
    - dimidius White, Stanton, 861.
    - exogyroides M. and H., Stanton, 861.
    - flaccidus White, Stanton, 861.
    - fragilis H. and M., Stanton, 861.
    - gilberti White, Stanton, 861.
    - labiatus Schlotheim, Stanton, 861.
    - multistriatus n. sp., Cragin, 186.
    - simsoni Meek, Stanton, 861.
    - tenuirostratus M. and H., Stanton, 861.
    - umbonatus M. and H., Stanton, 861.
    - undabundus M. and H., Stanton, 861.
  - Iphidea Billings, Hall, 383.
  - Ischnochiton tampænsis n. sp., Dall, 215.
  - Ischyrodonta ovalis n. sp., Ulrich, 940.
  - Isocardia humilis n. sp., Cragin, 186.
  - Isothea n. gen., Scudder 823.
    - alleni, Scudder, 823.
  - Juglandites
    - ellsworthianus n. sp., Lesquereux, 582.
    - fallax n. sp., Dawson, 239.
    - lacoei n. sp., Lesquereux, 582.
    - primordialis n. sp., Lesquereux, 582.
    - sinuatus n. sp., Lesquereux, 582.
  - Juglans
    - arctica Heer, Lesquereux, 582.
    - crassipes Heer, Lesquereux, 582.
  - Karpinskia Tschernyschew, Hall, 384.
  - Kayserella n. gen., Hall, 383.
  - Kayseria Davidson, Hall, 384.
  - Keyserlingia Pander, Hall, 383.
  - Koninckioceras, Hyatt, 478.
  - Kutorgina Billings, Hall, 383.
  - Laccopygus n. gen., Scudder, 823.
    - nilesii, Scudder, 823.
  - Lacertilia, Cope, 178.
  - Lachnopus
    - humatus, Scudder, 823.
    - recuperatus, Scudder, 823.
  - Lælaps incrassatus Cope, Cope, 180.
  - Laphmina Œhlert, Hall, 383.
  - Lapparia Conrad, Dall, 215.
  - Laricopsis longifolia Font., Fontaine, 328.
  - Larix churchbridgensis, Penhallow, 726.
  - Larus
    - californicus?, Shufeldt, 837.
    - oregonus n. sp., Shufeldt, 837.
    - philadelphia, Shufeldt, 837.
    - robustus n. sp., Shufeldt, 837.
  - Latirus
    - callimorphus n. sp., Dall, 215.
    - floridanus Heilprin, Dall, 215.
    - (floridanus var.?) multilineatus, Dall, 215.
    - hysipettus n. sp., Dall, 215.
    - rugatus n. sp., Dall, 215.
    - tessellatus n. sp , Dall, 215.
  - Laurelia primæva n. sp., Lesquereux, 582.
  - Laurophyllum
    - ellsworthianum Lesq., Lesquereux, 582.
    - insigne n. sp., Dawson, 239.

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- *Genera and species described*—Continued.
  - Laurus
    - angusta Heer, Lesquereux, 582.
    - antecedens n. sp., Lesquereux, 582.
    - hollæ Heer, Lesquereux, 582.
    - knowltoni n. sp., Lesquereux, 582.
    - (Carpites)
      - microcarpa n. sp., Lesquereux, 582.
      - plutonia Heer, Lesquereux, 582.
      - teliformis n. sp., Lesquereux, 582.
  - Laxispira lumbricalis, Whitfield, 1036.
  - Lecanocrinus tennesseensis n. sp., Miller, 670.
  - Leda (?) harveyi n. sp., Hill, 435.
  - Leguminosites
    - constrictus n. sp., Lesquereux, 582.
    - convolutus n. sp., Lesquereux, 582.
    - coronilloides? Heer, Lesquereux, 582.
    - dakotensis n. sp., Lesquereux, 582.
    - hymenophyllus n. sp., Lesquereux, 582.
    - insularis Heer, Lesquereux, 582.
    - omphalobioides n. sp., Lesquereux, 582.
    - phæseolites? Heer, Lesquereux, 582.
    - podogonialis n. sp., Lesquereux, 582.
    - truncatus n. sp., Lesquereux, 582.
  - Leiocidaris
    - hemigranosa Shumard, Cragin, 186.
    - hemigranosus Shumard, Clark, 139.
  - Leiostraca cretacea, Whitfield, 1036.
  - Leperditia
    - æquilatera n. sp., Ulrich, 938.
    - fimbriata n. sp., Ulrich, 938.
    - germana n. sp., Ulrich, 938.
    - granilabiata n. sp., Ulrich, 938.
    - inflata n. sp., Ulrich, 938.
    - millepunctata n. sp., Ulrich, 938.
    - mundula n. sp., Ulrich, 938.
    - (? primitia) dorsicornis n. sp., Ulrich, 938.
    - sulcata n. sp. and ventricornis n. var., Ulrich, 938.
    - tumida n. sp., Ulrich, 938.
  - Lepiditta
    - auriculata n. sp., Matthew, 654.
    - sigillata n. sp., Matthew, 654.
  - Leptæna Dalman, Hall, 383.
    - charlottæ, Winchell and Schuchert, 1081.
  - Leptænisca Beecher, Hall, 383.
    - adnascens n. sp., Hall, 383.
    - tangens n. sp., Hall, 383.
  - Leptella n. gen., Hall, 383.
  - Leptobolus Hall, Hall, 383.
    - grandis n. sp., Matthew, 654.
  - Leptocœlia Hall, Hall, 384.
  - Leptomaria
    - gigantea n. sp., Whitfield, 1036.
    - pergranulosa n. sp., Whitfield, 1036.
    - perlata, Whitfield, 1036.
  - Leptomeryx, Scott, 818.
    - mammifer Cope, Ami, 18.
  - Leptoplastus spinosus n. sp., Matthew, 654.
  - Leptopora gorbyi n. sp., Miller, 670.
  - Leptopoterion, James, 491.
  - Leptostrobus longifolius, Dawson, 238.
  - Leuroceras, Hyatt, 478.

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- *Genera and species described*—Continued.
  - Lichas
    - bicornis n. sp., Ulrich, 939.
    - (Hoplolichas) robbinsi n. sp., Ulrich, 939.
    - (Terataspis) n. sp., Whiteaves, 1035.
  - Lima
    - generosa n. sp., Cragin, 186.
    - semilævis n. sp., Cragin, 186.
    - utahensis n. sp., Stanton, 861.
  - Limalophus n. gen., Scudder, 823.
    - compositus, Scudder, 823.
    - contractus, Scudder, 823.
  - Limnohyops
    - fontinalis, Earle, 282.
    - laticeps, Earle, 282.
  - Lindera
    - masoni n. sp., Lesquereux, 582.
    - venusta n. sp., Lesquereux, 582.
  - Lindstrœmella n. subgen., Hall, 383.
    - aspidium n. gen. et sp., Hall, 383.
  - Lingula Bruguière, Hall, 383.
    - cf. billingsiana Whiteaves, Matthew, 654.
    - compta n. sp., Hall, 383.
    - flabellula n. sp., Hall, 383.
    - lingulata n. sp., Hall, 383.
    - paracletus n. sp., Hall, 383.
    - riciniformis var. galenensis, Winchell and Schuchert, 1081.
    - scutella n. sp., Hall, 383.
    - shumardi n. sp., Cragin, 186.
    - (Glossini) deflecta, Winchell and Schuchert, 1081.
  - Lingulasma Ulrich, Hall, 383.
    - galenensis, Winchell and Schuchert, 1081.
  - Lingulella Salter, Hall, 383.
    - cuneata n. sp., Matthew, 654.
  - Lingulepis Hall, Hall, 383.
  - Lingulops Hall, Hall, 383.
    - granti n. sp., Hall, 383.
  - Linnarssonia Walcott, Hall, 383.
  - Linthia tumidula Clark, Clark, 139.
  - Liochlamys bulbosa Heilprin, Dall, 215.
  - Liopeplum Dall, Dall, 215.
    - spillmani Dall, Dall, 215.
    - subjugosum Dall, Dall, 215.
  - Liopistha
    - (Psilomya)
      - concentrica n. sp., Stanton, 861.
      - elongata n. sp., Stanton, 861.
      - meeki White, Stanton, 861.
  - Lioplax floridana n. sp., Dall, 215.
  - Liotia
    - (Arene)
      - agenea n. sp., Dall, 215.
      - coronata n. sp., Dall, 215.
      - melium n. sp., Dall, 215.
      - paramata n. sp., Dall, 215.
      - solariella Heilprin, Dall, 215.
  - Liquidambar integrifolium Lesq., Lesquereux, 582.
  - Liriodendron
    - acuminatum Lesq., Lesquereux, 582.
    - acuminatum var. bilobatum n. var., Lesquereux, 582.

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  - *Genera and species described*—Continued.
    - Liriodendron
      - giganteum Lesq., Lesquereux, 582.
        - var. cruciforme Lesq., Lesquereux, 582.
      - intermedium Lesq., Lesquereux, 582.
      - meekii Heer, Lesquereux, 582.
      - obcordatum Lesq., Lesquereux, 582.
      - pinnatifidum Lesq., Lesquereux, 582.
      - prætulipiferum n. sp., Dawson, 239.
      - primævum Newb., Lesquereux, 582.
      - semialatum Lesq., Lesquereux, 582.
      - snowii n. sp., Lesquereux, 582.
      - succedens n. sp., Dawson, 239.
      - wellingtonii n. sp., Lesquereux, 582.
    - Lispoceras, Hyatt, 478.
      - rotundum n. sp., Hyatt, 478.
      - trivolve n. sp., Hyatt, 478.
    - Lispodesthes nuptialis White, Stanton, 861.
    - Lithophthorus n. gen., Scudder, 823.
      - rugosicollis, Scudder, 823.
    - Litsea
      - cretacea n. sp., Lesquereux, 582.
      - falcifolia n. sp., Lesquereux, 582.
    - Litsea weediana n. sp., Knowlton, 559.
    - Lomatia saportanea Lesq., Lesquereux, 582.
    - Loxonema
      - altivolvis n. sp., Whiteaves, 1035.
      - cingulatum n. sp., Whiteaves, 1035.
      - gracillimum n. sp., Whiteaves, 1035.
    - Lucapina suffusa Reeve, Dall, 215.
    - Lucina
      - juvenis n. sp., Stanton, 861.
      - subundata H. and M., Stanton, 861.
    - Lunatia
      - concinna Hall and Meek (sp.), Stanton, 861.
      - halli, Whitfield, 1036.
      - halli Gabb, Whitfield, 1036.
    - Luxonema winnipegense n. sp., Whiteaves, 1029.
    - Lyria
      - costata Sowerby, Dall, 215.
      - musicina Heilprin, Dall, 215.
      - pulchella Sowerby, Dall, 215.
    - Macclintockia
      - cretacea Heer, Lesquereux, 582.
      - trinervis Heer, Dawson, 239.
    - Maclurea manitobensis, Whiteaves, 1029.
    - Macrochilina
      - blairi n. sp., Miller, 670.
      - pulchella n. sp., Whiteaves, 1035.
    - Macrodon pygmæus n. sp., Whiteaves, 1035.
    - Macrotæniopteris vancouverensis n. sp., Dawson, 239.
    - Macrorhoptus intutus, Scudder, 823.
    - Mactra
      - emmonsi Meek, Stanton, 861.
      - huerfanensis n. sp., Stanton, 861.
      - (Cymbophora?) utahensis Meek, Stanton, 861.
    - Magdalis sedimentorum, Scudder, 823.
    - Magnolia
      - alternans Heer, Lesquereux, 582.
      - amplifolia Heer, Lesquereux, 582.
      - boulayana n. sp., Lesquereux, 582.

- Paleontology—Continued.
  - *Genera and species described*—Continued.
    - Magnolia
      - capellini Heer, Dawson, 239.
      - lacoeana n. sp., Lesquereux, 582.
      - obtusata Heer, Lesquereux, 582.
      - occidentalis n. sp., Dawson, 239.
      - pseudoacuminata n. sp., Lesquereux, 582.
      - tenuifolia Lesq., Lesquereux, 582.
    - Manteodon subquadratus Cope, Earle, 281.
    - Margarita
      - abyssina, Whitfield, 1036.
      - tampaensis n. sp., Dall, 215.
    - Margaritella abbotti, Whitfield, 1036.
    - Marginella
      - (apicina Menke var.?) pardalis Dall, Dall, 215.
      - aurora n. sp., Dall, 215.
      - ballista n. sp., Dall, 215.
      - (ballista var.?) tempæ Dall, Dall, 215.
      - bella Conrad, Dall, 215.
      - denticulata Conrad, Dall, 215.
      - elegantula n. sp., Dall, 215.
      - eulima n. sp., Dall, 215.
      - faunula n. sp., Dall, 215.
      - floridana n. sp., Dall, 215.
      - gravida n. sp., Dall, 215.
      - limatula Conrad, Dall, 215.
      - newmani n. sp., Dall, 215.
      - onchidella n. sp., Dall, 215.
      - precursor n. sp., Dall, 215.
      - semen Lea, Dall, 215.
      - styria Dall, Dall, 215.
      - virginiana Conrad, Dall, 215.
      - willcoxiana n. sp., Dall, 215.
      - (Volutella) amiantula n. sp., Dall, 215.
        - dacria n. sp., Dall, 215.
    - Mariacrinus
      - aureatus n. sp., Miller, 670.
      - granulosus n. sp., Miller, 670.
    - Mariopteris
      - mazoniana Lx. sp., White, 1022.
      - (Pseudopecopteris) decipiens Lx. sp., White, 1022.
    - Masteutes n. gen., Scudder, 823.
      - rupis, Scudder, 823.
      - saxifer, Scudder, 823.
    - Mastodon successor n. sp., Cope, 175.
    - Matheria rugosa n. sp., Ulrich, 940.
    - Mazzalina
      - costata n. sp., Dall, 215.
      - oweni Dall, Dall, 215.
    - Meekella White and St. John, Hall, 383.
    - Meioceras cingulatum n. sp., Dall, 215.
    - Megalichthys macropomus n. sp., Cope, 179.
    - Megalograptus, James, 491.
      - welchi, James, 491.
    - Megalonyx, Safford, 802.
      - leptostomus Cope, Cope, 183.
    - Melongena
      - corona Gmelin, Dall, 215.
      - sculpturata var. turricula, Dall, 215.
      - subcoronata var. aspinosa, Dall, 215.
    - Melocrinus
      - gregari n. sp., Rowley, 790.
      - oblongus n. sp., Wachsmuth and Springer, 974.

- **Paleontology**—Continued.
  - *Genera and species described*—Continued.
    - Melocrinus
      - parvus n. sp. Wachsmuth and Springer, 974.
      - roemeri n. sp., Wachsmuth and Springer, 974.
    - Meniscœssus Cope, Osborn, 701.
    - Menispermites rugosus n. sp., Lesquereux, 582.
    - Menodus augustigenis, Ami, 18.
    - Merista Suess, Hall, 384.
    - Meristella Hall, Hall, 384.
    - Meristina Hall, Hall, 384.
    - Mesalia elongata n. sp., Whitfield, 1036.
    - Mesohippus, Scott, 818.
    - Mesostoma occidentalis n. sp., Stanton, 861.
    - Mesothyra, Clarke, 146.
    - Mesotreta Kutorga, Hall, 383.
    - Metacoceras
      - cavatiformis, Hyatt, 478.
      - dubium n. sp., Hay 404.
      - hayi n. sp., Hay, 404.
      - inconspicum n. sp., Hay, 404.
      - walcotti, Hyatt, 478.
    - Metacypris
      - consobrina n. sp., Jones, 506.
      - cuneiformis n. sp., Jones, 506.
      - simplex n. sp., Jones, 506.
      - subcordata n. sp., Jones, 506.
    - Metaplasia n. gen., Hall, 384.
    - Miacis canavus Cope, Osborn and Wortman, 699.
    - Michelinia convexa D'Orbigny, Beecher, 57.
    - Mickwitzia Schmidt, Hall, 383.
    - Microdus dumbellii n. sp., Cope, 182.
    - Microspongia, James, 491.
      - gregaria, James, 491.
      - (?) subrotundus, James, 491.
    - Mimulus Barrande, Hall, 383.
    - Mitra
      - holmesii n. sp., Dall, 215.
      - lineolata Heilprin, Dall, 215.
      - (mississippiensis var. ?) silicata Dall, Dall, 215.
      - sp. undet., Dall, 215.
      - wandoensis Holmes, Dall, 215.
      - wilcoxii n. sp., Dall, 215.
    - Mitromorpha
      - cincta n. sp., Dall, 215.
      - pygmæa Dall, Dall, 215.
    - Modiola
      - branneri n. sp., Hill, 435.
      - filisculpta n. sp., Cragin, 186.
      - jurafacies n. sp., Cragin, 186.
      - stonewallensis n. sp., Cragin, 186.
      - (Brachydontes) multilinigera Meek, Stanton, 861.
    - Modiolopsis
      - concava n. sp., Ulrich, 940.
      - corrugata n. sp., Miller and Faber, 672.
      - longus n. sp., Miller and Faber, 672.
      - plana Hall, Ulrich, 940.
      - similis n. sp., Ulrich, 940.
      - subelliptica n. sp., Ulrich, 940.
      - sulcata n. sp., Miller and Faber, 672.

- **Paleontology**—Continued.
  - *Genera and species described*—Continued.
    - Modiomorpha
      - attenuata, Whiteaves, 1035.
      - compressa n. sp., Whiteaves, 1035.
      - parvula n. sp., Whiteaves, 1035.
      - tumida n. sp., Whiteaves, 1035.
    - Modulus
      - compactus n. sp., Dall, 215.
      - floridanus Conrad, Dall, 215.
      - lapidosa n. sp., Whitfield, 1036.
      - turbinatus Heilprin, Dall, 215.
      - willcoxii n. sp., Dall, 215.
    - Molleria duplinensis n. sp., Dall, 215.
    - Monobolina Salter, Hall, 383.
    - Monocladodus
      - clarki, Claypole, 154.
      - pinnatus, Claypole, 154.
    - Monomerella Billings, Hall, 383.
      - egani n. sp., Hall, 383.
      - greenii n. sp., Hall, 383.
      - kingi n. sp., Hall, 383.
      - ortoni n. sp., Hall, 383.
    - Monotrypa incerta n. sp., Ami, 12.
    - Monticulipora
      - filiasa, James, 491.
      - irregularis, James, 491.
      - turbinata, James, 491.
      - undulata, James, 491.
      - undulata var. hemispherica n. var., James 491.
    - Morea naticella, Whitfield, 1036.
    - Mortoniceras
      - shoshonense Meek, Stanton, 861.
      - vermillionense M. and H., Stanton, 861.
    - Mosasauridæ, Baur, 39.
    - Murchisonia sp., Calvin, 112.
      - archiacana (nom. nov.), Whiteaves, 1035.
      - dowlingii n. sp., Whiteaves, 1035.
    - Murex
      - chrysostoma Gray var. chipolana Dall Dall, 215.
      - mississippiensis Conrad, Dall, 215.
      - (Chicoreus ?)
        - burnsii Whitfield, Dall, 215.
        - micromeris n. sp., Dall, 215.
      - (Pteronotus) lævavaricosus n. sp., Whitfield, 1036.
        - textilis Gabb, Dall, 215.
      - (Pterorhytis)
        - conradi, Dall, 215.
        - umbrifer Conrad, Dall, 215.
    - Muricidea
      - floridana Conrad, Dall, 215.
      - multangula Philippi, Dall, 215.
      - spinulosa Heilprin, Dall, 215.
    - Myalina trigonalis n. sp., Whiteaves, 1035.
    - Mycetophætus n. gen., Scudder, 824.
      - intermedius, Scudder, 824.
    - Myelodactylus gorbyi n. sp., Miller, 670.
    - Mylacris pacardii, Scudder, 826.
    - Mylodon ? sodalis Cope, Cope, 183.
    - Myrica
      - aspera n. sp., Lesquereux, 582.
      - emarginata Heer, Lesquereux, 582.
      - longa Heer, Lesquereux, 582.

- Paleontology—Continued.
  - *Genera and species described*—Continued.
    - Myrica
      - obliqua n. sp., Lesquereux, 582.
      - schimperi n. sp., Lesquereux, 582.
    - Myrsine crassa n. sp., Lesquereux, 582.
    - Myrsinites? gaudina Lesq., Lesquereux, 582.
    - Myrtophyllum warderi n. sp., Lesquereux, 582.
    - Mytilarca inflata n. sp., Whiteaves, 1035.
    - Nassa
      - bidentata Emmons, Dall, 215.
      - caloosaensis n. sp., Dall, 215.
      - harpuloides Conrad, Dall, 215.
      - johnsoni n. sp., Dall, 215.
      - lapenotierei n. sp., Dall, 215.
      - scalaspira Conrad, Dall, 215.
    - Nassarina glypta Bush., Dall, 215.
    - Natica
      - abyssina, Whitfield, 1036.
      - abyssina Morton, Whitfield, 1036.
      - alticallosa n. sp., Dall, 215.
      - globulella n. sp., Whitfield, 1036.
      - humilis n. sp., Cragin, 186.
      - striaticostata n. sp., Cragin, 186.
      - (Cryptonatica) floridana n. sp., Dall, 215.
    - Naticopsis
      - inornata n. sp., Whiteaves, 1035.
      - manitobensis n. sp., Whiteaves, 1035.
    - Nautilus
      - bryani, Whitfield, 1036.
      - cookana n. sp., Whitfield, 1036.
      - dekayi, Whitfield, 1036.
      - elegans Sowerby, Stanton, 861.
      - texanus Shum., Cragin, 186.
    - Nemodon sulcatinus Evans and Shumard (sp.)?, Stanton, 861.
    - Neobolus Waagen, Hall, 383.
    - Neptunella mullicaensis n. sp., Whitfield, 1036.
    - Nerinea
      - hicoriensis n. sp., Cragin, 186.
      - pellucida n. sp., Cragin, 186.
      - volana n. sp., Cragin, 186.
    - Nerita tampaensis n. sp., Dall, 215.
    - Neritina
      - apparata n. sp., Cragin, 186.
      - chipolana n. sp., Dall, 215.
      - incompta White, Stanton, 861.
      - pisum Meek, Stanton, 861.
      - (Theodoxus?) edentula n. sp., Dall, 215.
      - (Velatella) patelliformis Meek, Stanton, 861.
    - Neritopsis
      - biangulatus Shum., Cragin, 186.
      - tramitensis n. sp., Cragin, 186.
    - Neumayria walcotti Hill, Hill, 435.
    - Neuropteris
      - angustifolia Brongn., White, 1022.
      - caudata n. sp., White, 1022.
      - cordata, White, 1022.
      - dilatata (L. and H.) Lx., White, 1022.
      - fasciculata Lx., White, 1022.
      - fimbriata Lx., White, 1022.
      - flexuosa Sternb., White, 1022.
      - hirsuta Lx., White, 1022.
      - jenneyi n. sp., White, 1022.
      - rarinervis Bunb., White, 1022.

- Paleontology—Continued.
  - *Genera and species described*—Continued.
    - Neuropteris
      - scheuchzeri Hoffm., White, 1022.
      - tenuifolia (Schloth.) Sternb., White, 1022.
      - cf. trichomanoides (Brongn.) Lx., White, 1022.
    - Niso
      - lineata Conrad, Dall, 215.
      - willcoxiana Dall, Dall, 215.
    - Nœggerathiopsis robinsi n. sp., Dawson, 239.
    - Nosotetocus n. gen., Scudder, 824.
      - marcovi, Scudder, 824.
    - Nucleospira Hall, Hall, 384.
      - indianensis n. sp., Miller, 670.
    - Nucula
      - coloradoensis n. sp., Stanton, 861.
      - manitobensis n. sp., Whiteaves, 1035.
    - Numitor n. gen., Scudder, 823.
      - claviger, Scudder, 823.
    - Obeliscus conellus n. sp., Whitfield, 1036.
    - Obolella Billings, Hall, 383.
    - Obolus Eichwald, Hall, 383.
      - (Botsfordia) pulchra Matthew, 654.
    - Odontofusus n. gen., Whitfield, 1036.
      - medians n. sp., Whitfield, 1036.
      - rostellaroides n. sp., Whitfield, 1036.
      - slacki, Whitfield, 1036.
      - typicus n. sp., Whitfield, 1036.
    - Odontostomia
      - (Syrnola)
        - attenuata n. sp., Dall, 215.
        - caloosaensis n. sp., Dall, 215.
    - Oehlertella n. subgen., Hall, 383.
    - Olcostephanus (Astieria) deansii n. sp., Whiteaves, 1030.
    - Olivella
      - lata n. sp., Dall, 215.
      - mutica Say, Dall, 215.
    - Ollacrinus papillatus, Whitfield, 1037.
    - Omileus evanidus, Scudder, 823.
    - Omphalocrinus manitobensis, Whiteaves, 1035.
    - Oncodoceras n. gen., Hyatt, 478.
    - Onychaster
      - asper n. sp., Miller, 670.
      - confragosus n. sp., Miller, 670.
      - demissus n. sp., Miller, 670.
    - Onychocrinus
      - cantonensis n. sp., Miller and Gurley, 673.
      - ulrichi n. sp., Miller and Gurley, 673.
    - Opali, see Scala (Opalia) H. and A. Adams, Dall, 215.
    - Opis texana n. sp., Cragin, 186.
    - Ophioglypha
      - bridgerensis (Morton), Clark, 139.
      - texana Clark, Clark, 139.
    - Ophryastes
      - grandis, Scudder, 823.
      - petrarum, Scudder, 823.
    - Ophryastites n. gen., Scudder, 823.
      - absconsus, Scudder, 823.
      - cinereus, Scudder, 823.
      - digressus, Scudder, 823.
      - dispertitus, Scudder, 823.
    - Oracodon conulus n. sp., Marsh, 632.

Paleontology—Continued.
Genera and species described—Continued.
Orbicula Sowerby, Hall, 383.
Orbiculoidea Davidson, Hall, 383.
D'Orbigny, Hall, 383.
herzeri n. sp., Hall, 383.
numulus n. sp., Hall, 383.
(Schizotreta) ovalis n. sp., 383.
Orchestes languidulus, Scudder, 823.
Orophocrinus whitei, Whitfield, 1037.
Ornithomimus sedens n. sp., Marsh, 633.
Orthaulax, see Rostellaria (Orthaulax) Gabb, Dall, 215.
Orthidium n. gen., Hall, 383.
Orthis Dalman, Hall, 383.
benedicti n. sp., Miller, 670.
carausii, Matthew, 653.
electra Bill., var. major, n. var., Matthew, 653.
lævis n. var., Matthew, 653.
euryone Bill. var., Matthew, 653.
holstoni Safford, Hall, 383.
meedsi, Winchell and Schuchert, 1081.
meedsi var. germana, Winchell and Schuchert, 1081.
menaplæ (Hicks?) var., Matthew, 653.
orthambonites (Pander), Matthew, 653.
proavita, Winchell and Schuchert, 1081.
saffordi n. sp., Hall, 383.
(Dalmanella)
arcuaria n. sp., Hall, 383.
superstes n. sp., Hall, 383.
(Plæsiomys) loricula n. sp., Hall, 383.
(Rhipidomella) oweni n. sp., Hall, 383.
(Schizophoria)
manitobensis (nom. prov.), Whiteaves, 1035.
senecta n. sp., Hall, 383.
Orthoceras, Clark, 147.
Orthoceras, Foerste, 325.
Orthoceras cf.
priamus Bill., Matthew, 653.
catulus Bill., Matthew, 653.
harii n. sp., Miller. 670.
primigenium vanuxem, Calvin, 112.
Orthodesma
minnesotense n. sp., Ulrich, 940.
mundum n. sp., Miller and Faber, 672.
saffordi n. sp., Ulrich, 940.
Orthopsis occidentalis n. sp., Cragin, 186.
Orthostrophia Hall, Hall, 383.
Orthotheca.
de geeri Holm, Matthew, 654.
emmonsi Ford, Matthew, 654.
Orthothetis Fischer de Waldheim, Hall, 383.
desideratus n. sp., Hall, 383.
Orthotichia, Hall, 383.
Oryctorhinus n. gen., Scudder, 823.
tenuirostris, Scudder, 823.
Ostrea
alifera n. sp., Cragin, 186.
var. nov. pediformis, Cragin, 186.
alternans n. sp., Cragin, 186.
anomoides Meek, Stanton, 861.
bella Con., Cragin, 186.
bellaplicata Shum., Cragin, 186.

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Genera and species described—Continued.
Ostrea
camelina n. sp., Cragin, 186.
carica n. sp., Cragin, 186.
congesta Conrad, Stanton, 861.
crenulimargo Roem., Cragin, 186.
var. nov. stonewallensis, Cragin, 186.
diluviana Linn, Cragin, 186.
franklini Coq., Cragin, 186.
franklini ragsdalei n. var., Hill, 435.
lugubris Conrad, Stanton, 861.
lugubris Con., Cragin, 186.
lyoni Shum., Cragin, 186.
malachitensis n. sp., Stanton, 861.
munsoni n. sp., Hill, 436.
perversa n. sp., Cragin, 186.
plumosa Mort., Cragin, 186.
prudentia White, Stanton, 861.
soleniscus, Stanton, 861.
soleniscus Mk., Cragin, 186.
subovata Shum., Cragin, 186.
subspatulata Forbes, Cragin, 186.
uniformis Meek, Stanton, 861.
Otiorhynchites
absentivus, Scudder, 823.
commutatus, Scudder, 823.
fossilis, Scudder, 823.
tysoni, Scudder, 823.
Otiorhynchus
flaccus, Scudder, 823.
subterastus, Scudder, 823.
Ovula (Transovula) multicarinata n. sp., Dall, 215.
Oxyæna
forcipata Cope, Osborn and Wortman, 707.
lupina Cope, Osborn and Wortman, 707.
Pachyæna
gigantea n. sp., Osborn and Wortman, 707.
ossifraga Cope, Osborn and Wortman, 707.
Pachydiscus
brazoensis Shum., Cragin, 186.
complexus H. and M., Cragin, 186.
Pachylobius
compressus, Scudder, 823.
deleticius, Scudder, 823.
deprædatus, Scudder, 823.
Pagiophyllum dubium n. sp., Fontaine, 328.
Pagophyllum, Dawson, 238.
Palæacmæa? cingulata n. sp., Whiteaves, 1035.
Palæaspis (Claypole), Claypole, 158.
Palæaster eucharis Hall, Cole, 163.
Palæcis cavernosa n. sp., Miller, 670.
Palæocassia laurinea n. sp., Lesquereux, 582.
Palæoctonus
dumblianus Cope n. sp., Cope, 183.
orthodon Cope n. sp., Cope, 183.
Palæonictis occidentalis n. sp., Osborn and Wortman, 707.
Palæopalæmon newberryi, Whitfield, 1038.
Palæophyllum, James, 491.
divaricans, James, 491.
Palæoscincus Leidy, Marsh, 635.

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Genera and species described—Continued.

- Palæosyops
  - borealis, Earle, 282.
  - borealis Cope, Osborn and Wortman, 707.
  - lævideus, Earle, 282.
  - longirostris n. sp., Earle, 282.
  - megarhinus, Earle, 282.
  - minor, Earle, 282.
  - paludosus, Earle, 282.
- Palæotetrix gilli n. gen. et sp., Shufeldt, 837.
- Paliurus
  - anceps n. sp., Lesquereux, 582.
  - cretaceus n. sp., Lesquereux, 582.
  - membranaceus Lesq., Lesquereux, 582.
  - neilii n. sp., Dawson, 239.
  - obovatus n. sp., Lesquereux, 582.
  - ovalis Dawson, Lesquereux, 582.
- Palosetrus n. gen., Scudder, 824.
  - oligocenus, Scudder, 824.
- Paltorhynchus n. gen., Scudder, 823.
  - (?) bisulcatus, Scudder, 823.
  - narwhal, Scudder, 823.
  - rectirostris, Scudder, 823.
- Parabolinella posthuma n. sp., Matthew, 653.
- Paralegoceras iowense, Hyatt, 478.
- Paralogus n. gen., Scudder, 826.
  - æschnoides, Scudder, 826.
- Parapholas sphenoideus White, Stanton, 861.
- Parazyga n. gen., Hall, 384.
- Parka decipiens, Dawson and Penhallow, 242.
- Parrotia
  - canfieldi n. sp., Lesquereux, 582.
  - grandidentata n. sp., Lesquereux, 582.
  - winchelli n. sp., Lesquereux, 582.
- Pasceolus globosus, James, 491.
  - darwinii, James, 491.
  - (?) tumidus, James, 491.
- Patellina texana (Roemer), Hill, 435.
- Paterula Barrande, Hall, 383.
- ?Patriofelis leidyanus n. sp., Osborn and Wortman, 707.
- Pattersonia, James, 491.
  - difficilis, James, 491.
  - tuberosa, James, 491.
- Pecopteris
  - browniana, Dawson, 238.
  - dentata Brongn. (non Will.), White, 1022.
  - (Asterotheca) lesquereuxii n. sp., White, 1022.
  - (Ptychocarpus) unita Brongn.? White, 1022.
- Pecten stantoni n. sp., Hill, 435.
- Pedinopsis pondi Clark, Clark, 139.
- Pediocætes
  - lucasi n. sp., Shufeldt, 837.
  - nanus n. sp., Shufeldt, 837.
- Pentacrinus
  - asteriscus Meek and Hayden, Clark, 139.
  - bryani Gabb, Clark, 139.
  - whitei Clark, Clark, 139.
- Pentagonia Cozzens, Hall, 384.
- Pentamerus colletti n. sp., Miller, 670.
  - ducussatus Whiteaves, Calvin, 114.
- Perchœrus (Dicotyles) antiquus, Marsh, 642.
- Periechocrinus whitei, Whitfield, 1037.

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Genera and species described—Continued.

- Perissolax
  - dubia, Whitfield, 1036.
  - trivola, Whitfield, 1036.
- Perplicaria Dall, Dall, 215.
  - perplexa n. sp., Dall, 215.
- Persea
  - hayana n. sp., Lesquereux, 582.
  - leconteana Lesq., Lesquereux, 582.
  - schimperi n. sp., Lesquereux, 582.
- Persoonia lesquereuxii n. sp., Lesquereux, 582.
- Phacoceras, Hyatt, 478.
  - dumbli n. sp., Hay, 404.
- Phæthonides, Beecher, 59.
- Phalacrocorax macropus, Shufeldt, 837.
- Phalium
  - aldrichi n. sp., Dall, 215.
  - globosum n. sp., Dall, 215.
- Pharella? pealei Meek, Stanton, 861.
- Phaseolites formus n. sp., Lesquereux, 582.
- Phillisastrea gigas, Calvin, 111.
- Phœnicopterus copei n. sp., Scufeldt, 837.
- Pholadomya
  - coloradoensis n. sp., Stanton, 861.
  - ingens n. sp., Cragin, 186.
  - knowltoni n. sp., Hill, 435.
  - lerchi n. sp., Hill, 435.
  - papyracea M. and H., Stanton, 861.
  - postextenta n. sp., Cragin, 186.
- Pholidops Hall, Hall, 383.
  - calceola n. sp., Hall, 383.
  - patina n. sp., Hall, 383.
- Phos sp. undet., Dall, 215.
- Phragmites cretaceus Lesq., Lesquereux, 582.
- Phragmoceras missouriense n. sp., Miller, 670.
- Phyllites, Dawson, 239.
  - amissus n. sp., Lesquereux, 582.
  - aristolochlæformis n. sp., Lesquereux, 582.
  - celatus n. sp., Lesquereux, 582.
  - durescens n. sp., Lesquereux, 582.
  - erosus n. sp., Lesquereux, 582.
  - ilicifolius n. sp., Lesquereux, 582.
  - lacoie n. sp., Lesquereux, 582.
  - laurencianus n. sp., Lesquereux, 582.
  - perplexus n. sp., Lesquereux, 582.
  - snowii n. sp., Lesquereux, 582.
  - stipulæformis n. sp., Lesquereux, 582.
  - vanonæ Heer, Lesquereux, 582.
  - zamiæformis n. sp., Lesquereux, 582.
- Phyllobius
  - antecessor, Scudder, 823.
  - avus, Scudder, 823.
  - carcerarius, Scudder, 823.
- Phyllocarida, Clarke, 146.
- Phyllocladus subintegrifolius Lesq., Lesquereux, 582.
- Physa meigsii n. sp., Dall, 215.
- Phyxelis
  - dilapsus, Scudder, 823.
  - eradicatus, Scudder, 823.
  - evigoratus, Scudder, 823.
  - excissus, Scudder, 823.

Paleontology—Continued,
- *Genera and species described*—Continued.
  - Placenticeras
    - placenta (Dekay), Stanton, 861.
    - syrtalis Mort., var. nov. cumminsi, Cragin, 186.
  - Placoderm, Claypole, 150 and 155.
  - Placunopsis? hilliardensis White, Stanton, 861.
  - Plæsiomya, Hall, 383.
  - Planetoceras n. gen., Hyatt, 478.
  - Planorbis
    - conanti n. sp., Dall, 215.
    - disstoni n. sp., Dall, 215.
    - willcoxii n. sp., Dall, 215.
  - Platanus
    - cissoides n. sp., Lesquereux, 582.
    - newberriana Heer, Lesquereux, 582.
    - obtusiloba Lesq., Lesquereux, 582.
    - primæva? Lesq., Dawson, 239.
    - primæva Lesq., Lesquereux, 582.
      - grandidentata var., Lesquereux, 582.
      - integrifolia, Lesquereux, 582.
      - subintegrifolia, Lesquereux, 582.
  - Platecarpus coryphæus Cope, Baur, 39.
  - Platyceras
    - boonvillense n. sp., Miller, 670.
    - missouriense n. sp., Miller, 670.
    - nasutum n. sp., Miller, 670.
    - pettisense n. sp., Miller, 670.
    - (Orthonychia) parvulum n. sp., Whiteaves, 1035.
  - Platycrinus
    - alabamensis n. sp., Miller, 670.
    - clytis, Whitfield, 1037.
    - elegans, Whitfield, 1037.
    - excavatus, Whitfield, 1037.
    - striobrachiatus, Whitfield, 1037.
  - Platygonus bicalcaratus Cope, Cope, 183.
  - Platyostoma
    - broadheadi n. sp., Miller, 670.
    - tumidum n. sp., Whiteaves, 1035.
  - Platysomus
    - lacovianus n. sp., Cope, 170.
    - palmaris n. sp., Cope, 170.
  - Platystrophia King, Hall, 383.
  - Plectambonites Pander, Hall, 383.
    - gibbosa, Winchell and Schuchert, 1081.
  - Plectorthis, Hall, 383.
  - Plethocardia n. gen., Ulrich, 940.
    - suberecta n. sp., Ulrich, 940.
    - umbonata n. sp., Ulrich, 940.
  - Pleurodictyum lenticulare, Beecher, 58.
  - Pleuromya (?) henselli n. sp., Hill, 435.
  - Pleurotoma
    - albida Perry, Dall, 215.
    - farmingdalensis n. sp., Whitfield, 1036.
    - hitzi Meek, Stanton, 861.
    - regularicostata n. sp., Whitfield, 1036.
    - servata Conrad, Dall, 215.
    - surculitiformis n. sp., Whitfield, 1036.
    - (Surcula?) altispira n. sp., Whitfield, 1036.
  - Pleurotomaria
    - brittoni n. sp., Whitfield, 1036.
    - harii n. sp., Miller, 670.
    - infranodosa n. sp., Whiteaves, 1035.

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- *Genera and species described*—Continued.
  - Pleurotomaria
    - macilenta n. sp., Cragin, 186.
    - robusta n. sp., Cragin, 186.
    - sedaliensis, n. sp., Miller, 670.
    - spenceri n. sp., Whiteaves, 1035.
    - tintonensis n. sp., Whitfield, 1036.
  - Pleurotrema n. gen., Whitfield, 1036.
    - solariformis n. sp., Whitfield, 1036.
  - Plianchenia, Cope, 175.
  - Pliauchenia spatula Cope, Cope, 183.
  - Plicatula arenaria Meek, Stanton, 861.
    - dentonensis n. sp., Cragin, 186.
    - hydrotheca White, Stanton, 861
    - incongrua Con., Cragin, 186.
  - Pinacotrypa marginata n. sp., Whiteaves, 1035.
  - Pinna petrina White, Stanton, 861.
  - Pinus
    - anthraciticus n. sp., Dawson, 238.
    - (Cyclopitus) nordenskioldii, Dawson, 238.
  - Pisocrinus .
    - benedicti n. sp., Miller, 670.
    - campana n. sp., Miller, 670.
    - gemmiformis, Miller, 670.
    - gorbyi n. sp., Miller, 670.
  - Pisania (Celatoconus) nux n. sp., Dall, 215.
  - Podazamites
    - acutifolius Font.?, Fontaine, 328.
    - angustifolius (Eichw.) Schimp., Lesquereux, 582.
    - lanceolatus (L. and H.) Brongn., Lesquereux, 582.
    - stenopus n. sp., Lesquereux, 582.
  - Polygraphus wortheni, Scudder, 823.
  - Polynices
    - (Amauropsis) burnsii n. sp., Dall, 215.
    - (Lunatia)
      - heros Say, Dall, 215.
      - internus Say, Dall, 215.
  - Polypora (porosa? var.) manitobensis, Whiteaves, 1035.
  - Populus
    - berggreni Heer, Lesquereux, 582.
    - harkeriana n. sp., Lesquereux, 582.
    - hyperborea Heer, Lesquereux, 582.
    - kansaseana n. sp., Lesquereux, 582.
    - meedsii n. sp., Knowlton, 552.
    - problematica n. sp., Knowlton, 559.
    - stygia Heer, Lesquereux, 582.
  - Populites
    - elegans Lesq., Lesquereux, 582.
    - litigiosus Heer, Lesq., Lesquereux, 582.
    - probalsamifera n. sp., Dawson, 239.
    - sternbergii n. sp., Lesquereux, 582.
  - Porcellia manitobensis (nom. prov.), Whiteaves, 1035.
  - Porocystis n. gen., Cragin, 186.
    - pruniformis n. sp., Cragin, 186.
  - Portheus Cope, Crook, 192.
  - Potamides
    - hillsboroensis Heilprin, Dall, 215.
    - (Lampanella) transecta Dall, Dall, 215.
    - (Pyrazisinus)
      - acutus n. sp., Dall, 215.
      - scalatus Heilprin, Dall, 215.

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- *Genera and species described*—Continued.
  - Potamocypris
    - affinis n. sp., Jones, 506.
    - unisulcata, Jones, 506.
  - Poteriocrinus
    - agnatus n. sp., Miller, 670.
    - amœnus n. sp., Miller, 670.
    - arcanus n. sp., Miller and Gurley, 673.
    - boonvillensis n. sp., Miller, 670.
    - cantonensis n. sp., Miller and Gurley, 673.
    - coryphæus n. sp., Miller, 670.
    - crawfordsvillensis n. sp., Miller and Gurley, 673.
    - disparilis n. sp., Miller and Gurley, 673.
    - granuliferus n. sp., Miller and Gurley, 673.
    - granilineus n. sp., Miller and Gurley, 673.
    - graphicus n. sp., Miller and Gurley, 673.
    - subramosus n. sp., Miller and Gurley, 673.
    - verus n. sp., Miller and Gurley, 673.
    - (Scaphiocrinus) carinatus, Whitfield, 1037.
  - Prasopora lycoperdon, vanuxem var., selwyni, n. var., Ami, 12.
  - Primitia aurora n. sp., Matthew, 654.
  - Prionocyclus
    - macombi Meek, Stanton, 861.
    - wyomingensis Meek, Stanton, 861.
  - Prionomerus irvingii, Scudder, 823.
  - Prionotropis
    - hyatti n. sp., Stanton, 861.
    - lœvianus (White), Stanton, 861.
    - woolgari (Mantell), Stanton, 861.
  - Procamelus leptognathus Cope n. sp., Cope, 183.
  - Procas
    - verberatus, Scudder, 823.
    - vinculatus, Scudder, 823.
  - Proboscidella Oehlert, Hall, 383.
  - Productella Hall, Hall, 383.
  - Productus Sowerby, Hall, 383,
    - blairi n. sp., Miller, 670.
  - Proetus mundulus n. sp., Whiteaves, 1035.
  - Protapirus
    - obliquidens n. sp., Wortman and Earle, 1108.
    - simplex n. sp., Wortman and Earle, 1108.
  - Protaræa, James, 491.
    - vetusta, James, 491.
  - Proteoides
    - lancifolius Heer, Lesquereux, 582.
    - major n. sp., Dawson, 239.
    - neillii n. sp., Dawson, 239.
  - Protocardia sp. undet., Hill, 435.
  - Protocardium
    - pendens n. sp., Cragin, 186.
    - stonei n. sp., Cragin, 186.
    - subspingerum n. sp., Cragin, 186.
  - Protoceras Marsh, Osborn and Wortman, 708.
    - celer, Marsh, 642.
  - Protodus n. gen., Woodward, 1100.
    - jexi n. sp., Woodward, 1100.
  - Protohippus
    - castilli Cope, Cope, 183.
    - fossulatus Cope n. sp., Cope, 183.
    - insignis Leidy, Cope, 183.
    - labrosus Cope, Cope, 183.

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- *Genera and species described*—Continued.
  - Protohippus
    - lenticularis Cope sp. nov., Cope, 183.
    - mirabilis Leidy, Cope, 183.
    - pachyops Cope n. sp., Cope, 183.
    - pavulus Marsh, Cope, 183.
    - perditus Leidy, Cope, 183.
    - placidus Leidy, Cope, 183.
    - sejunctus Cope, Cope, 183.
  - Protolenus Matt., Matthew, 649.
    - elegans n. gen. et sp., Matthews, 647, 654.
    - paradoxoides, Matthews, 647, 654.
  - Protophyllum, Dawson, 239.
    - crassum n. sp., Lesquereux, 582.
    - crenatum, Lesquereux, 582.
    - denticulatum n. sp., Lesquereux, 582.
    - dimorphum n. sp., Lesquereux, 582.
    - haydenii Lesq., Lesquereux, 582.
    - integerrimum Lesq., Lesquereux, 582.
    - leconteanum Lesq., Lesquereux, 582.
    - multinerve Lesq., Lesquereux, 582.
    - præstans n. sp., Lesquereux, 582.
    - pseudospermoides n. sp., Lesquereux, 582.
    - pterospermifolium n. sp., Lesquereux, 582.
    - sternbergii Lesq., Lesquereux, 582.
    - undulatum n. sp., Lesquereux, 582.
  - Protorthis n. gen., Hall, 383.
  - Protoscolex magnus n. sp., Miller and Faber, 672.
  - Protosphyrænidæ S. Woodward, Crook, 192.
  - Prunus (amygdalus)? antecedens n. sp., Lesquereux, 582.
  - Psammechinus cingulatus Clark, Clark, 139.
  - Pseudodiadema
    - emersoni Clark, Clark, 139.
    - diatretum (Morton), Clark, 139.
    - texanum (Roemer), Clark, 139.
    - texanum Roemer, Cragin, 186.
  - Pseudoliva vetusta?, Whitfield, 1036.
  - Pseudophorus tectiformis n. sp., Whiteaves, 1035.
  - Pteria? salinensis White, Cragin, 186.
  - Pterinea lobata n. sp., Whiteaves, 1035.
  - Pterinopecten sedaliensis n. sp., Miller, 670.
  - Pteris dakotensis n. sp., Lesquereux, 582.
  - Pterospermites
    - cupanioides Newby, Knowlton, 552.
    - longeacuminata n. sp., Lesquereux, 582.
    - modestus n. sp., Lesquereux, 582.
  - Ptilodus Cope, Osborn, 701.
  - Ptychoceras (Solenoceras) annulifer, Whitfield, 1036.
  - Ptychospira n. gen., Hall, 384.
  - Pugnellus fusiformis (Meek), Stanton, 861.
  - Pulchellia bentonianum n. sp., Cragin, 186.
  - Pycnodont, Cope, 182.
  - Pyramidella
    - arenosa Conrad, Dall, 215.
    - crenulata Holmes, Dall, 215.
  - Pyrifusus
    - cuneus n. sp., Whitfield, 1036.
    - erraticus n. sp., Whitfield, 1036.
    - macfarlandi n. sp., Whitfield, 1036.
    - meeki n. sp., Whitfield, 1036.
    - mullicaensis?, Whitfield, 1036.

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Genera and species described—Continued.
Pyrifusus
pyruloides, Whitfield, 1036.
territus n. sp., Whitfield, 1036.
Pyrina
bulloides n. sp., Cragin, 186.
parryi Hall, Clark, 139.
parryi Hall, Cragin, 186.
Pyropsis
elevata, Whitfield, 1036.
coloradoensis n. sp., Stanton, 861.
naticoides n. sp., Whitfield, 1036.
(?) obesa n. sp., Whitfield, 1036.
octolirata, Whitfield, 1036.
perlata?, Whitfield, 1036.
rectifer, Whitfield, 1036.
reileyi n. sp., Whitfield, 1036.
richardsonii?, Whitfield, 1036.
trochiformis?, Whitfield, 1036.
(Rapa?) corrina n. sp., Whitfield, 1036.
(Rapa?) septemlirata, Whitfield, 1036.
Quercus
alnoides n. sp., Lesquereux, 582.
glascoena n. sp., Lesquereux, 582.
hexagona Lesq., Lesquereux, 582.
holmesii Lesq, Dawson, 239.
spurio-ilex n. sp., Lesquereux, 582.
suspecta n. sp., Lesquereux, 582.
wardiana n. sp., Lesqureux, 582.
(Dryophyllum)
hieracifolia, Lesquereux, 582.
hosiana n. sp., Lesquereux, 582.
rhamnoides n. sp., Lesquereux, 582.
Radiolites davidsoni n. sp., Hill, 436.
Rafinesquina n. gen., Hall, 383.
Rapana
tampaensis Dall var.?, Dall, 215.
tampaensis n. sp., Dall, 215.
Raphistoma
multivolvatum n. sp., Calvin, 112.
paucivolvatum, n. sp., Calvin, 112.
pepinense Meek, Calvin, 112.
tyrrellii n. sp., Whiteaves, 1035.
Receptaculites, James, 491.
circularis, James, 491.
dickhauti, James, 491.
reticulatus, James, 491.
Requiemia texana (?) (Roemer), Hill, 435.
Retzia King, Hall, 384.
Rhamnites apiculatus n. sp., Lesquereux, 582.
Rhamnus
inæquilateralis n. sp., Lesquereux, 582.
mudgei n. sp., Lesquereux, 582.
prunifolius Lesq., Lesquereux, 582.
revoluta n. sp., Lesquereux, 582.
similis n. sp., Lesquereux, 582.
Rhaphidiopsis n. gen., Scudder, 826.
diversipenna, Scudder, 826.
Rhinobolus Hall, Hall, 383.
davidsoni n. sp., Hall, 383.
Rhinocantha? conradi n. sp., Whitfield, 1036.
Rhinocaris, Clarke, 146.
Rhinoceros matutinus, Marsh, 642.
Rhipidomella Oehlert, Hall, 383.

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Genera and species described—Continued.
Rhipidopterygia Cope, 170.
Rhodocrinus
cælatus n. sp., Miller and Gurley, 673.
sculptus n. sp., Miller and Gurley, 673.
Rhombodictyon globosus n. sp., James, 491.
Rhus
powelliana n. sp., Lesquereux, 582.
uddeni n. sp., Lesquereux, 582.
westii n. sp., Lesquereux, 582.
Rhynchites subterraneus, Scudder, 823.
Rhynochospira Hall, Hall, 384.
Rhynochotrema inæquivalvis var. laticostata, Winchell and Schuchert, 1081.
Rhysosternum n. gen., Scudder, 823.
æternabile, Scudder, 823.
longirostre, Scudder, 823.
Rhyssomatus tabescens, Scudder, 823.
Rineceras n. gen., Hyatt, 478.
Ringicula (floridana var.?) guppiyi Dall, Dall, 215.
Rissoa
athymorhyssa n. sp., Dall, 215.
lipeus n. sp., Dall, 215.
(Onoba)
callistrophia n. sp., Dall, 215.
geræa n. sp., Dall, 215.
var. minor, Dall, 215.
microharia n. sp., Dall, 215.
Rissoina
chipolana n. sp., Dall, 215.
johnsoni n. sp., Dall, 215.
lævigata Adams, Dall, 215.
Roemerella n. subgen., Hall, 383.
Rostellaria
compacta n. sp., Whitfield, 1036.
curta n. sp., Whitfield, 1036.
fusiformis n. sp., Whitfield, 1036.
hebe n. sp., Whitfield, 1036.
nobilis n. sp., Whitfield, 1036.
spirata n. sp., Whitfield, 1036.
(Orthaulax) Gabb, Dall, 215.
gabbi n. sp., Dall, 215.
pugnax Heilprin, Dall, 215.
(Rimella) smithii n. sp., Dall, 215.
Rostellites
ambigua n. sp., Stanton, 861.
angulatus n. sp., Whitfield, 1036.
biconicus n. sp., Whitfield, 1036.
dalli n. sp., Stanton, 861.
gracilis n. sp., Stanton, 861.
nasutus, Whitfield, 1036.
pupoides n. sp., Cragin, 186.
texturatus n. sp., Whitfield, 1036.
Sabal imperialis Dn., Dawson, 239.
Saccocrinus gorbyi n. sp., Miller, 670.
Salenia
bellula Clark, Clark, 139.
texana Credner, Clark, 139.
texana Credn., Cragin, 186.
tumidula Clark, Clark, 139.
Salisburia pusilla n. sp., Dawson, 239.
Salix, Dawson, 239.
delata n. sp., Lesquereux, 582.
hayei n. sp., Lesquereux, 582.

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Genera and species described—Continued.
Salix
proteæfolia
var. flexuosa Lesq., Lesquereux, 582.
lanceolata Lesq., Lesquereux, 582.
linearfolia Lesq., Lesquereux, 582.
longifolia Lesq., Lesquereux, 582.
Saperdirhynchus n. gen., Scudder, 823.
priscotitillator, Scudder, 823.
Sapindus
diversifolius n. sp., Lesquereux, 582.
morrisoni Lesq., Lesquereux, 582.
Sassafras
primordiale n. sp., Lesquereux, 582.
subintegrifolium Lesq., Lesquereux, 582.
(Araliopsis)
cretaceum Newb., var. Grossedentatum Lesq., n. var. Lesquereux, 582.
dissectum Lesq., Lesquereux, 582.
papillosum n. sp., Lesquereux, 582.
Scala (Opalia) H. and A. Adams, Dall, 215.
(Opalia) de-bouryi Dall, Dall, 215.
(Sthemorytis) stearnsii, Dall, 215.
Scalaria
hercules n. sp., Whitfield, 1036.
pauperata n. sp., Whitfield, 1036.
sillimani, Whitfield, 1036.
tenuilirata n. sp., Whitfield, 1036.
(Opalia) thomasi?, Whitfield, 1036.
Scaphander Montfort, Dall, 215.
floridana Heilprin, Dall, 215.
primus Aldrich, Dall, 215.
Scaphella
trenholmii Tuomey and Holmes, Dall, 215.
(Aurinia)
mutabilis Conrad, Dall, 215.
virginiana Conrad, Dall, 215.
(Aurinia?) striata Gabb, Dall, 215.
(Caricella)
leana Dall, Dall, 215.
podagrina, Dall, 215.
subangulata Conrad, Dall, 215.
Scaphiocrinus
bellus n. sp., Miller and Gurley, 673.
bonoensis n. sp., Miller and Gurley, 673.
borbyi n. sp., Miller, 670.
lacunoses n. sp., Miller and Gurley, 673.
manus n. sp., Miller and Gurley, 673.
præmorsus n. sp., Miller and Gurley, 673.
repertus n. sp., Miller and Gurley, 673.
robustus (?) Hall, Miller, 670.
samsoni n. sp., Miller, 670.
Scaphites
hippocrepis, Whitfield, 1036.
iris, Whitfield, 1036.
larvæformis Meek and Hayden, Stanton, 861.
mullananus M. and H., Stanton, 861.
nodosus, Whitfield, 1036.
reniformis, Whitfield, 1036.
septem-seriatus n. sp., Cragin, 186.
similis n. sp., Whitfield, 1036.
ventricosus M. and H., Stanton, 861.
vermiformis M. and H., Stanton, 861.
warreni M. and H., Stanton, 861.

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Genera and species described—Continued.
Scenidium Hall, Hall, 383.
Schizambon Walcott, Hall, 383.
Schizobolus Ulrich, Hall, 383.
Schizocrania Hall and Whitfield, Hall, 383.
helderbergia n. sp., Hall, 383.
schucherti n. sp., Hall, 383.
Schizodus harii n. sp., Miller, 670.
Schizopholis Waagen, Hall, 383.
Schizophoria King, Hall, 383.
Schizotreta Kutorga, Hall, 383.
Schlœnbachia
leonensis Con., Cragin, 186.
peruviana Von B., Cragin, 186.
woolgari Mantell, Cragin, 186.
Schmidtella crassimarginata n. gen. et sp., Ulrich, 938.
Schmidtia Volborth, Hall, 383.
Schœnaster legrandensis n. sp., Miller and Gurley, 673.
Sciabregma n. gen., Scudder, 823.
rugosa, Scudder, 823.
Scolecophagus affinis n. sp., Shufeldt, 837.
Scyphophorus
fossionis, Scudder, 823.
lævis, Scudder, 823.
Scythropus
somniculosus, Scudder, 823.
subterraneus, Scudder, 823.
Seminula, see Athyris (Seminula) McCoy, Hall, 384.
Sequoia
langsdorffii Heer, Dawson, 239.
pagiophylloides n. sp., Fontaine, 328.
Serpula
intrica White, Stanton, 861.
paluxiensis n. sp., Hill, 435.
tenuicarinata Meek and Hayden, Hall, 215.
Serpulorbus
granifera tenera Dall, Dall. 215.
(granifera var. ?) ballistæ Dall, Dall, 215.
Serrifusus
crosswickensis n. sp., Whitfield, 1036.
(Lirofusus) nodocarinatus n. sp., Whitfield, 1036.
Sibynes whitneyi, Scudder, 823.
Sigaretus
chipolanus n. sp., Dall, 215.
multiplicatus n. sp., Dall, 215.
(Eunaticina?) textilis n. sp., Stanton, 861.
Sigillaria Brongn., White, 1022.
Siliqua huerfanensis n. sp., Stanton, 861.
Siliquatia pauperata n. sp., Whitfield, 1036.
Siphonotreta de Verneuil, Hall, 383.
minnesotensis n. sp., Hall, 383.
Sitona
exitiorum, Scudder, 823.
fodinarum, Scudder, 823.
paginarum, Scudder, 823.
Smicrorhynchus n. gen., Scudder, 823.
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Smilax
grandifolia-cretacea n. sp., Lesquereux, 582.
undulata n. sp., Lesquereux, 582.

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- *Genera and species described*—Continued.
  - Solariella
    - louisiana n. sp., Dall, 215.
    - turritella n. sp., Dall, 215.
  - Solarium amphitermum n. sp., Dall, 215.
  - Solemya? obscura n. sp., Stanton, 861.
  - Solenocheilus
    - collectus, Hyatt, 478.
    - kentuckiensis n. sp., Hyatt, 478.
    - rockfordense n. sp., Miller, 670.
  - Solenopora compacta Billings, Ami, 12.
  - Solenosteira
    - inornata n. sp., Dall, 215.
    - mengeana n. sp., Dall, 215.
  - Spathella subelliptica n. sp., Whiteaves, 1035.
  - Sphæria problematica n. sp., Lesquereux, 582.
  - Sphærophthalmus alatus Boeck, var. canadensis, n. var., Matthew, 654.
  - Sphenodiscus
    - dumblii n. sp., Cragin, 186.
    - emarginatus n. sp., Cragin, 186.
    - lenticularis Owen, Cragin, 186.
    - roemeri n. sp., Cragin, 186.
  - Sphenolepidium
    - pachyphyllum?, Dawson, 238.
    - sternbergianum var. densifolium, Font., Fontaine, 328.
  - Sphenophyllum Brongiart, White, 1022.
    - cuneifolium (Sternb.) Zeill., White, 1022.
    - majus Brongn., White, 1022.
  - Sphenopteris
    - hildreti Lx., White, 1022.
    - lacoei n. sp., White, 1022.
    - laliloba?, Dawson, 238.
    - macilenta L. and H., White, 1022.
    - valdensis Heer, Fontaine, 328.
    - (Pseudopecopteris) obtusiloba Brongn., White, 1022.
  - Spirifera
    - aciculifera n. sp., Rowley, 790.
    - macbridei, Calvin, 115.
    - mundula n. sp., Rowley, 790.
    - urbana, Calvin, 115.
  - Spiriferina D'Orbigny, Hall, 384.
  - Spirigerella, see Athyris (Spirigerella) Waagen, Hall, 384.
  - Spodotribus n. gen., Scudder, 823.
    - terrulentus, Scudder, 823.
  - Spondylobolus McCoy, Hall, 383.
    - hilli n. sp., Cragin, 186.
  - Stagodon validus n. sp., Marsh, 632.
  - Stearoceras n. gen., Hyatt, 478.
    - gibbosum, Hyatt, 478.
  - Steganus n. gen., Scudder, 823.
    - barrandei, Scudder. 823.
  - Stenogomphus n. gen., Scudder, 824.
    - carletoni, Scudder, 824.
  - Stenopoceras n. gen., Hyatt, 478.
  - Stephanocrinus
    - elongatus n. sp., Miller, 670.
    - hamelli n. sp., Miller, 670.
    - obpyramidalis n. sp., Miller, 670.
    - osgoodensis, Miller, 670.
  - Sterculia
    - aperta Lesq., Lesquereux, 582.
    - mucronata n. sp., Lesquereux, 582.

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- *Genera and species described*—Continued.
  - Sterculia
    - reticulata n. sp., Lesquereux, 582.
    - snowii n. sp., Lesquereux, 582.
    - snowii var. disjuncta n. var., Lesquereux, 582.
  - Stiraderes n. gen., Scudder, 823.
    - conradi, Scudder, 823.
  - Stomechinus hyatti Clark, Clark, 139.
  - Straparollina obtusa n. sp., Whiteaves, 1035.
  - Straporollus
    - blairi n. sp., Miller, 670.
    - claytonensis n. sp., Calvin, 112.
    - pristiniformis n. sp., Calvin, 112.
  - Streptelasma, James, 491.
    - corniculum, James, 491.
  - Streptis Davidson, Hall, 383.
  - Streptorhynchus King, Hall, 383.
    - ulrichi n. sp., Hall, 383.
  - Stribalocystites tumidus n. gen. et sp., Miller, 670.
  - Stroboceras, Hyatt, 478.
  - Stromatocerium, James, 491.
    - canadense, James, 491.
  - Stromatopora, James, 491.
    - hindei, James, 491.
    - indianiensis, n. sp., James, 491.
    - (?) lichenoides, James, 491.
    - ludlowensis, James, 491.
    - papillata, James, 491.
    - scabra, James, 491.
    - subcylindrica, James, 491.
    - tubularis, James, 491.
  - Strombus
    - albirupianus n. sp., Dall, 215.
    - aldrichi n. sp., Dall, 215.
    - chipolana n. sp., Dall, 215.
    - leidyi Heilprin, Dall, 215.
    - pugilis Linné, Dall, 215.
  - Strophalosia King, Hall, 383.
    - beecheri n. sp., Rowley, 790.
    - rockfordensis n. sp., Hall, 383.
  - Stropheodonta Hall, Hall, 383.
  - Strophia
    - albera, Dall, 215.
    - (anodonta var.?) floridana Dall, Dall, 215.
    - (Eostrophia) anodonta n. sp., Dall, 215.
  - Strophomena
    - avata n. sp., Matthew, 653.
    - conradi n. sp., Hall, 383.
    - emaciata, Winchell and Schuchert, 1081.
    - planodorsata, Winchell and Schuchert, 1081.
    - scofieldi, Winchell and Schuchert, 1081.
    - septata, Winchell and Schuchert, 1081.
    - winchelli n. sp., Hall, 383.
  - Strophonella Hall, Hall, 383.
  - Styliola primæva n. sp., Matthew, 653.
  - Styplobasis knightiana Cope n. gen. et sp., Cope, 170.
  - Subclymenia D'Orbigny, Hyatt, 478.
  - Subulites benedicti n. sp., Miller, 670.
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    - perobesa n. sp., Whitfield, 1036.
    - strigosa, Whitfield, 1036.

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- *Genera and species described*—Continued.
  - Surculites
    - annosus, Whitfield, 1036.
    - cadavarosus n. sp., Whitfield, 1036.
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  - Syntomostyles n. nom., Scudder, 823.
    - rudis, Scudder, 823.
  - Syringotheris Winchell, Hall, 384.
  - Systemodon
    - semihians Cope, Osborn and Wortman, 707.
    - tapirinus Cope, Osborn and Wortman, 707.
  - Tæniopteris missouriensis n. sp., White, 1023.
  - Tainoceras
    - cavatum, Hyatt, 478.
    - duttoni n. sp., Hyatt, 478.
    - quadrangulum, Hyatt, 478.
  - Tapes
    - cyrimeriformis n. sp., Stanton, 861.
    - dentonensis n. sp., Cragin, 186.
  - Taxocrinus
    - concavus n. sp., Rowley, 790.
    - juvenis, Whitfield, 1037.
    - subovatus n. sp., Miller and Gurley, 673.
  - Taxodium, Dawson, 290.
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    - divaricatus n. sp., Ulrich, 937.
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    - caloosaense n. sp., Dall, 215.
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    - vortex n. sp., Dall, 215.
  - Telacodon lævis n. gen. et sp., Marsh, 632.
  - Teleocrinus ægilops, Whitfield, 1037.
  - Tellina
    - isonema Meek, Stanton, 861.
    - modesta Meek, Stanton, 861.
    - subalata Meek, Stanton, 861.
    - (Palæomoera?) whitei n. sp., Stanton, 861.
  - Tellinomya
    - compressa n. sp., Ulrich, 940.
    - intermedia n. sp., Ulrich, 940.
    - longa n. sp., Ulrich, 937.
    - nitida n. sp., Ulrich, 940.
    - planodorsata n. sp., Ulrich, 940.
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    - firmus, Scudder, 823.
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    - (Acus)
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  - Teretrum n. gen., Scudder, 823.
    - primulum, Scudder, 823.
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  - Testudo
    - hexagonata Cope, Cope, 183.
    - laticaudala Cope, Cope, 183.
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    - pertenuis Cope, Cope, 183.
    - turgida n. sp., Cope, Cope, 182.
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    - turgida Cope, Cope, 183.
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    - shepardii Leidy, Cope, 183.
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    - lanceolata n. sp., Knowlton, 559.
    - polymorpha (Lx.), Knowlton, 559.
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    - kentuckiense n. sp., Hyatt, 478.
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  - Tornatina
    - canaliculata Say, Dall, 215.
    - wetherelli Lea, Dall, 215.
    - wetherelli, Whitfield, 1036.
  - Torosaurus, Marsh, 631.
  - Toxorhynchus n. gen., Scudder, 823.
    - minusculus, Scudder, 823.
    - oculatus, Scudder, 823.
  - Trachytriton
    - atlanticum n. sp., Whitfield, 1036.
    - holmdelense n. sp., Whitfield, 1036.
    - multivaricosum n. sp., Whitfield, 1036.
  - Trematis Sharpe, Hall, 383.
  - Trematobolus n. gen., Matthew, 650.
    - insignis Matt., Matthew, 654.
  - Trematoceras Hyatt, Hyatt, 478.
    - ohioense n. sp., Miller and Faber, 671.
  - Trematofusus venustus n. sp., Whitfield, 1036.
  - Trematopygus crucifer (Morton), Clark, 139.
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  - Triarthrus, Beecher, 60.
    - becki Green, Beecher, 61.
    - becki, Matthew, 657.
  - Tribolocceras, Hyatt, 478.
  - Trichocnemis aliena, Scudder, 824.
  - Trichotropis shumardi n. sp., Cragin, 186.
  - Triforis
    - perversa Linné, var. nigrocincta Adams, Dall, 215.
    - modesta C. B. Adams, Dall, 215.

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  - *Genera and species described*—Continued.
    - Triforis
      - distincta O. Meyer, Dall, 215.
      - mitella n. sp., Dall, 215.
      - terrebrata Heilprin, Dall, 215.
    - Trigonarca
      - depressa (White), Stanton, 861.
      - obliqua Meek, Stanton, 861.
    - Trigonia
      - clavigera n. sp., Cragin, 186.
      - concentrica n. sp., Cragin, 186.
      - securiformis n. sp., Cragin, 186.
      - stolleyi n. sp., Hill, 435.
      - taffi n. sp., Cragin, 186.
      - vyschetzkii n. sp., Cragin, 186.
    - Trigonoscuta inventa, Scudder, 823.
    - Trigonostoma subthomasiæ n. sp., Dall, 215.
    - Trimerella Billings, Hall, 383.
    - Triplecia Hall, Hall, 383.
    - Triton
      - eocenense n. sp., Whitfield, 1036.
      - (Epidromus) præcedens n. sp., Whitfield, 1036.
    - Tritonidea
      - huerfanensis n. sp., Stanton, 861.
      - obesa n. sp., Whitfield, 1036.
      - pauper n. sp., Dall, 215.
    - Tritonium kanabense n. sp., Stanton, 861.
    - Troostocrinus nitidulus n. sp., Miller and Gurley, 673.
    - Trophon (Aspella) engonatus n. sp., Dall, 215.
    - Tropideres
      - remotus, Scudder, 823.
      - vastatus, Scudder, 823.
    - Tryblidium indianense n. sp., Miller, 670.
    - Trypanorhynchus n. gen, Scudder, 823.
      - corruptivus, Scudder, 823.
      - depratus, Scudder, 823.
      - sedatus, Scudder, 823.
    - Tuba acutissima n. sp., Dall, 215.
    - Tudicla planimarginata n. sp., Whitfield, 1036.
    - Turbinella
      - chipolana n. sp., Dall, 215.
      - parva, Whitfield, 1036.
      - polygonata Heilprin, Dall, 215.
      - regina Heilprin, Dall, 215.
      - scolymoides n. sp., Dall, 215.
      - subconica, Whitfield, 1036.
      - verticalis n. sp., Whitfield, 1036.
      - wilsoni Conrad, Dall, 215.
      - (Vasum)
        - haitense Sowerby var. engonatum, Dall, 215.
        - subcapitellum Heilprin, Dall, 215.
    - Turbinopsis
      - angulata n. sp., Whitfield, 1036.
      - curta n. sp., Whitfield, 1036.
      - elevata n. sp., Whitfield, 1036.
      - hilgardi ?, Whitfield, 1036.
      - major n. sp., Whitfield, 1036.
      - plicata n. sp., Whitfield, 1036.
      - septariana n. sp., Cragin, 186.
    - Turbo rhectogrammicus n. sp., Dall, 215.
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      - chipolana n. sp., Dall, 215.
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    - Turbonilla
      - multicostata C. B. Adams, Dall, 215.
      - nivea Stimpson, Dall, 215.
      - protracta n. sp., Dall, 215.
      - puncta C. B. Adams, var. obsoleta Dall, Dall, 215.
      - punicea Dall, Dall, 215.
      - pupoides D'Orbigny, Dall, 215.
      - pusilla C. B. Adams, Dall, 215.
      - recticulata C. B. Adams, Dall, 215.
      - speira Ravenel ?, Dall, 215.
      - stricta Verrill, Dall, 215.
      - textilis Kurtz, Dall, 215.
      - virga Dall, Dall, 215.
      - virgata Dall, Dall, 215.
      - (Ondina) fragilis n. sp., Dall, 215.
    - Turricula
      - leda n. sp., Whitfield, 1036.
      - reileyi n. sp., Whitfield, 1036.
      - scalariformis n. sp., Whitfield, 1036.
    - Turrilites pauper n. sp., Whitfield, 1036.
    - Turritella
      - apicalis Heilprin, Dall, 215.
      - chipolana n. sp., Dall, 215.
      - coalvillensis Mk., Cragin, 186.
      - compacta n. sp., Whitfield, 1036.
      - encrinoides, Whitfield, 1036.
      - granulicostata, Whitfield, 1036.
      - hardimanensis, Whitfield, 1036.
      - lippincotti n. sp., Whitfield, 1036.
      - megalobasis n. sp., Dall, 215.
      - micronema Meek, Stanton, 861.
      - parattenuata Heilprin, Dall, 215.
      - pumila ?, Whitfield, 1036.
      - renauxiana D'Orb., Cragin, 186.
      - seriatim-granulata Roem., Cragin, 186.
      - subannulata Heilprin, Dall, 215.
      - subgrundifera n. sp., Dall, 215.
      - tampæ Heilprin, Dall, 215.
        - var. pagodæformis Heilprin, Dall, 215.
          - tripartita, Dall, 215.
      - terebriformis n. sp., Dall, 215.
      - verterbroides, Whitfield, 1036.
      - whitei n. sp., Stanton, 861.
    - Tychius
      - evolatus, Scudder, 823.
      - secretus, Scudder, 823.
    - Typhis
      - floridanus Dall, Dall, 215.
      - linguiferus n. sp., Dall, 215.
    - Tylostoma
      - mutabilis Gabb, Cragin, 186.
      - pedernalis (Roemer), Hill, 435.
    - Uintacrinus socialis Grinnell, Clark, 139.
    - Ulmophyllum priscum n. sp., Dawson, 239.
    - Ulocrinus n. gen., Miller and Gurley, 673.
      - buttsi n. sp., Miller and Gurley, 673.
      - kansasensis n. sp., Miller and Gurley, 673.
    - Uncinelli Waagen, Hall, 384.
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    - Urosalpinx trossulus Conrad, Dall, 215.
    - Utriculus vaginatus n. sp., Dall, 215.
    - Vaginella chipolana n. sp., Dall, 215.
    - Vasum conoides n. sp., Whitfield, 1036.

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  - *Genera and species described*—Continued.
    - Veniella
      - goniophora Meek, Stanton, 861.
      - mortoni M. and H., Stanton, 861.
    - Venus malonensis n. sp., Cragin, 186.
    - Viburnites
      - crassus n. sp., Lesquereux, 582.
      - masoni n. sp., Lesquereux, 582.
    - Viburnum
      - ellsworthianum n. sp., Lesquereux, 582.
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      - lesquereuxii n. sp., Lesquereux, 582.
        - var. cardifolium n. var., Lesquereux, 582.
          - commune n. var., Lesquereux, 582.
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          - latius n. var., Lesquereux, 582.
          - longifolium n. var., Lesquereux, 582.
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          - tenuifolium n. var., Lesquereux, 582.
      - sphenophyllum n. sp., Lesquereux, 582.
    - Vicarya branneri n. sp., Hill, 435.
    - Vitulina Hall, Hall, 384.
    - Vola
      - bellula n. sp., Cragin, 186.
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    - Volborthia von Möller, Hall, 383.
    - Voluta
      - delawarensis, Whitfield, 1036.
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      - (Amoria) vesta n. sp., Whitfield, 1036.
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    - Volutilithes
      - cancellatus n. sp., Whitfield, 1036.
      - precursor Dall, Dall, 215.
      - sayana, Whitfield, 1036.
      - Subgen. Athleta Conrad, Dall, 215.
        - Caricella Conrad, Dall, 215.
        - Volutilithes, s. s., Dall, 215.
        - Volutocorbis Dall, Dall, 215.
    - Volutoderma
      - abbotti, Whitfield, 1036.
      - biplicata, Whitfield, 1036.
      - intermedia n. sp., Whitfield, 1036.
      - ovata n. sp., Whitfield, 1036.
    - Volutomorpha
      - conradi, Whitfield, 1036.
      - gabbi n. sp., Whitfield, 1036.
      - mucronata, Whitfield, 1036.
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      - (Piestochilus) bella, Whitfield, 1036.
        - kanei, Whitfield, 1036.
    - Whitfieldella n. nom., Hall, 384.

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      - concentrica n. sp., Ulrich, 940.
      - præcipta, Ulrich, 940.
    - Williamsonia
      - elocata n. sp., Lesquereux, 582.
      - texana n. sp., Fontaine, 328.
    - Winchellia, Lesquereux, 583.
    - Winchellina fascina n. gen. et sp., Herzer, 423.
      - fascina, Knowlton, 554.
    - Xenophora
      - conchyliophora Born. Dall, 215.
      - lapiferens n. sp., Whitfield, 1036.
      - leprosa, Whitfield, 1036.
      - simpsoni n. sp., Stanton, 861.
    - Yoldia
      - septariana n. sp., Cragin, 186.
      - subelliptica n. sp., Stanton, 861.
    - Zamites sp., Lesquereux, 582.
      - montana, Dawson, 238.
      - tenuinervis Font., Fontaine, 328.
    - Zaphrentis
      - calyculus n. sp., Miller, 670.
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      - (?) ohioensis, James, 491.
      - tantilla n. sp., Miller, 670.
      - tenella, n. sp., Miller, 670.
    - Zeacrinus
      - commaticus, Miller, 670.
      - dubius n. sp., Miller and Gurley, 673.
      - scoparius, Whitfield, 1037.
    - Zizphus dakotensis n. sp., Lesquereux, 582.
    - Zophocrinus howardi n. gen. et sp., Miller, 670.
    - Zygospira Hall, Hall, 384.
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77. The Texan Permian and its Mesozoic Types of Fossils, by Charles A. White. 1891. 8°. 51 pp. 4 pl. Price 10 cents.

78. A Report of Work done in the Division of Chemistry and Physics, mainly during the Fiscal year 1889–'90. F. W. Clarke, Chief Chemist. 1891. 8°. 131 pp. Price 15 cents.

79. A Late Volcanic Eruption in Northern California and its Peculiar Lava, by J. S. Diller. 1891. 8°. 33 pp. 17 pl. Price 10 cents.

80. Correlation Papers—Devonian and Carboniferous, by Henry Shaler Williams. 1891. 8°. 279 pp. Price 20 cents.

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83. Correlation Papers—Eocene, by William Bullock Clark. 1891. 8°. 173 pp. 2 pl. Price 15 cents.

84. Correlation Papers—Neocene, by W. H. Dall and G. D. Harris. 1892. 8°. 349 pp. 3 pl. Price 25 cents.

85. Correlation Papers—The Newark System, by Israel Cook Russell. 1892. 8°. 344 pp. 13 pl. Price 25 cents.

86. Correlation Papers—Archean and Algonkian, by C. R. Van Hise. 1892. 8°. 549 pp. 12 pl. Price 25 cents.

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91. Record of North American Geology for 1890, by Nelson Horatio Darton. 1891. 8°. 88 pp. Price 10 cents.

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93. Some Insects of Special Interest from Florissant, Colorado, and Other Points in the Tertiaries of Colorado and Utah, by Samuel Hubbard Scudder. 1892. 8°. 35 pp. 3 pl. Price 5 cents.

94. The Mechanism of Solid Viscosity, by Carl Barus. 1892. 8°. 138 pp. Price 15 cents.

95. Earthquakes in California in 1890 and 1891, by Edward Singleton Holden. 1892. 8°. 31 pp. Price 5 cents.

96. The Volume Thermodynamics of Liquids, by Carl Barus. 1892. 8°. 100 pp. Price 10 cents.

97. The Mesozoic Echinodermata of the United States, by William Bullock Clark. 1893. 8°. 207 pp. 50 pl. Price 20 cents.

98. Flora of the Outlying Carboniferous Basins of Southwestern Missouri, by David White. 1893. 8°. 139 pp. 5 pl. Price 15 cents.

99. Record of North American Geology for 1891, by Nelson Horatio Darton. 1892. 8°. 73 pp. Price 10 cents.

100. Bibliography and Index of the Publications of the U. S. Geological Survey, 1879–1892, by Philip Creveling Warman. 1893. 8°. 495 pp. Price 25 cents.

101. Insect Fauna of the Rhode Island Coal Field, by Samuel Hubbard Scudder. 1893. 8°. 27 pp. 1 pl. Price 5 cents.

102. A Catalogue and Bibliography of North American Mesozoic Invertebrata, by Cornelius Breckinridge Boyle. 1893. 8°. 315 pp. Price 25 cents.

103. High Temperature Work in Igneous Fusion and Ebullition, chiefly in Relation to Pressure, by Carl Barus. 1893. 8°. 57 pp. 9 pl. Price 10 cents.

104. Glaciation of the Yellowstone Valley north of the Park, by Walter Harvey Weed. 1893. 8°. 41 pp. 4 pl. Price 5 cents.

105. The Laramie and the Overlying Livingston Formation in Montana, by Walter Harvey Weed, with Report on Flora, by Frank Hall Knowlton. 1893. 8°. 68 pp. 6 pl. Price 10 cents.

106. The Colorado Formation and its Invertebrate Fauna, by T. W. Stanton. 1893. 8°. 288 pp. 45 pl. Price 20 cents.

107. The Trap Dikes of the Lake Champlain Region, by James Furman Kemp and Vernon Freeman Marsters. 1893. 8°. 62 pp. 4 pl. Price 10 cents.

108. A Geological Reconnoissance in Central Washington, by Israel Cook Russell. 1893. 8°. 108 pp. 12 pl. Price 15 cents.

109. The Eruptive and Sedimentary Rocks on Pigeon Point, Minnesota, and their Contact Phenomena, by William Shirley Bayley. 1893. 8°. 121 pp. 16 pl. Price 15 cents.

110. The Paleozoic Section in the Vicinity of Three Forks, Montana, by Albert Charles Peale. 1893. 8°. 56 pp. 6 pl. Price 10 cents.

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113. A Report of Work done in the Division of Chemistry during the Fiscal Years 1891-'92 and 1892-'93. F. W. Clarke, Chief Chemist. 1893. 8°. 115 pp. Price 15 cents.

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115. A Geographic Dictionary of Rhode Island, by Henry Gannett. 1894. 8°. 31 pp. Price 5 cents.

116. A Geographic Dictionary of Massachusetts, by Henry Gannett. 1894. 8°. 126 pp. Price 15 cents.

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119. A Geological Reconnoissance in Northwest Wyoming, by George Homans Eldridge. 1894. 8°. 72 pp. 4 pl. Price 10 cents.

120. The Devonian System of Eastern Pennsylvania and New York, by Charles S. Prosser. 1894. 8°. 81 pp. 2 pl. Price 10 cents.

121. A Bibliography of North American Paleontology, by Charles Rollin Keyes. 1894. 8°. 251 pp. Price 20 cents.

122. Results of Primary Triangulation, by Henry Gannett. 1894. 8°. 412 pp. 17 pl. Price 25 cents.

123. A Dictionary of Geographic Positions, by Henry Gannett. 1895. 8°. 183 pp. 1 pl. Price 15 cents.

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125. The Constitution of the Silicates, by Frank Wigglesworth Clarke. 1895. 8°. 109 pp. Price 15 cents.

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127. Catalogue and Index of Contributions to North American Geology, 1732-1891, by Nelson Horatio Darton. 1896. 8°. 1045 pp. Price 60 cents.

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129. Earthquakes in California in 1894, by Charles D. Perrine. 1895. 8°. 25 pp. Price 5 cents.

130. Bibliography and Index of North American Geology, Paleontology, Petrology, and Mineralogy for 1892 and 1893, by Fred Boughton Weeks. 1896. 8°. 210 pp. Price 20 cents.

131. Report of Progress of the Division of Hydrography for the Calendar Years 1893 and 1894, by Frederick Haynes Newell, Topographer in Charge. 1895. 8°. 126 pp. Price 15 cents.

132. The Disseminated Lead Ores of Southeastern Missouri, by Arthur Winslow. 1896. 8°. 31 pp. Price 5 cents.

133. Contributions to the Cretaceous Paleontology of the Pacific Coast: The Fauna of the Knoxville Beds, by T. W. Stanton. 1895. 8°. 132 pp. 20 pl. Price 15 cents.

134. The Cambrian Rocks of Pennsylvania, by Charles Doolittle Walcott. 1896. 8°. 43 pp. 15 pl. Price 5 cents.

135. Bibliography and Index of North American Geology, Paleontology, Petrology, and Mineralogy for the Year 1894, by F. B. Weeks. 1896. 8°. 141 pp. Price 15 cents.

136. Volcanic Rocks of South Mountain, Pennsylvania, by Florence Bascom. 1896. 8°. 124 pp. 28 pl. Price 15 cents.

140. Report of Progress of the Division of Hydrography for the Calendar Year 1895, by Frederick Haynes Newell, Hydrographer in Charge. 1896. 8°. 356 pp. Price 25 cents.

In press:

137. Geology of the Fort Riley Military Reservation, Kansas, by Robert Hay.

138. Artesian-well Prospects in the Atlantic Coastal Plain Region, by N. H. Darton.

139. Geology of the Castle Mountain Mining District, Montana, by W. H. Weed and L. V. Pirsson.

141. The Eocene Deposits of the Middle Atlantic Slope in Delaware, Maryland, and Virginia, by William Bullock Clark.

142. A Brief Contribution to the Geology and Paleontology of Northwestern Louisiana, by T. Wayland Vaughan.

143. A Bibliography of Clays and the Ceramic Arts, by John C. Branner.

144. The Moraines of the Missouri Coteau and their Attendant Deposits, by James Edward Todd.

145. The Potomac Formation in Virginia, by W. M. Fontaine.

146. Bibliography and Index of North American Geology, Paleontology, Petrology, and Mineralogy for the Year 1895, by F. B. Weeks.

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Mineral Resources of the United States, 1882, by Albert Williams, jr. 1883. 8°. xvii, 813 pp. Price 50 cents.

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Mineral Resources of the United States, 1886, by David T. Day. 1887. 8°. viii, 813 pp. Price 50 cents.

Mineral Resources of the United States, 1887, by David T. Day. 1888. 8°. vii, 832 pp. Price 50 cents.

Mineral Resources of the United States, 1888, by David T. Day. 1890. 8°. vii, 652 pp. Price 50 cents.

Mineral Resources of the United States, 1889 and 1890, by David T. Day. 1892. 8°. viii, 671 pp. Price 50 cents.

Mineral Resources of the United States, 1891, by David T. Day. 1893. 8°. vii, 630 pp. Price 50 cents.

Mineral Resources of the United States, 1892, by David T. Day. 1893. 8°. vii, 850 pp. Price 50 cents.

Mineral Resources of the United States, 1893, by David T. Day. 1894. 8°. viii, 810 pp. Price 50 cents.

On March 2, 1895, the following provision was included in an act of Congress:

"*Provided*, That hereafter the report of the mineral resources of the United States shall be issued as a part of the report of the Director of the Geological Survey."

In compliance with this legislation, the report Mineral Resources of the United States for the Calendar Year 1894 forms Parts III and IV of the Sixteenth Annual Report of the Survey, and Mineral Resources of the United States for the Calendar Year 1895 forms Part III of the Seventeenth Annual Report of the Survey.

The money received from the sale of these publications is deposited in the Treasury, and the Secretary of the Treasury declines to receive bank checks, drafts, or postage stamps; all remittances, therefore, must be by POSTAL NOTE or MONEY ORDER, made payable to the Director of the U. S. Geological Survey, or in CURRENCY, for the exact amount. Correspondence relating to the publications of the Survey should be addressed

TO THE DIRECTOR OF THE
UNITED STATES GEOLOGICAL SURVEY,
WASHINGTON, D. C.

WASHINGTON, D. C., *June, 1896.*

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NORTH AMERICAN GEOLOGY, PALEONTOLOGY, PETROLOGY, AND MINERALOGY

FOR

THE YEAR 1894

BY

FRED BOUGHTON WEEKS

WASHINGTON
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1896

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LETTER OF TRANSMITTAL.

Department of the Interior,
United States Geological Survey,
Division of Geology,
Washington, D. C., October 22, 1895.

Sir: I have the honor to transmit herewith the manuscript of a Bibliography and Index of North American Geology, Paleontology, Petrology, and Mineralogy for the year 1894, by Mr. F. B. Weeks, with the recommendation that it be published by the Survey. It is planned on the same lines with that for 1892–93, by the same author, and bears evidence of the same careful preparation.

Very respectfully,

S. F. Emmons,
Geologist.

Hon. Charles D. Walcott,
Director United States Geological Survey.

BIBLIOGRAPHY AND INDEX OF NORTH AMERICAN GEOLOGY, PALEONTOLOGY, PETROLOGY, AND MINERALOGY FOR THE YEAR 1894.

By **Fred Boughton Weeks.**

INTRODUCTION.

This work is a continuation of the Bibliography and Index for 1892 and 1893 (Bulletin No. 130), and records the papers on North American geology, paleontology, petrology, and mineralogy published in the year 1894, almost all of which appeared in the serials composing the List of Publications Examined, immediately following.

Bibliography.—The Bibliography consists of full titles of separate papers, classified by authors, an abbreviated reference to the publication in which the paper is printed, and a brief summary of the contents, each paper being numbered for index reference. The extent of papers less than a single page in length is indicated, as $\frac{1}{3}$ p., 5 l. (lines).

Index.—The subject headings, their subdivisions and arrangement, are shown in the Classified Key to the Index. They comprise geographic, geologic, mineralogic, paleontologic, and petrologic subdivisions. Under Economic Geology is given a list of useful minerals and ores described in publications examined; under Mineralogy, a list of minerals described in such publications; under Paleontology, a list of genera and species of fossils therein described; and under Petrology, a list of rocks described; reference being made in each case, by author's name and number of article in the Bibliography, to the paper in which the fossil, mineral, or rock is described.

LIST OF PUBLICATIONS EXAMINED.

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Alabama Industrial and Scientific Society: Proceedings, Vol. IV, Nos. 1-2. Tuscaloosa, Ala.

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American Journal of Science, 3d ser., Vols. XLVII-XLVIII. New Haven, Conn.

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Abstract: Am. Geol., vol. xiii, p. 141 (½ p.).

Describes the topographic character of parts of the Bahamas and the distribution of corals, and discusses recent views on the formation of coral reefs.

4 **Aguilera** (José G.). The geology of Mexico.

Commission Geologico Mexicana.

Abstract: Am. Jour. Sci., 3d ser., vol. xlvii, pp. 78–79.

5 **Aldrich** (T. H.). The (Midway) Clayton Tertiary section and its fossils [Alabama].

Ala. Geol. Surv., Rept. on the geology of the Coastal Plain of Alabama, pp. 240–248, pls. xii–xv.

Describes the fossils occurring at this horizon, including six new species.

6 —— New Tertiary fossils from Red Bluff, Mississippi.

Nautilus, vol. vii, pp. 97–99.

Describes six new species from this locality.

7 **American Geologist.** The origin of spheroidal basalt.

Am. Geol., vol. xiv, pp. 321–326 (editorial comment).

Reviews a paper on the eruptive rocks of Point Bonita, by F. Leslie Ransome, and discusses certain features of the greenstones of the Lake Superior region.

8 **Ami** (H. M.). Notes on fossils from Quebec City, Canada.

Ottawa Nat., vol. viii, pp. 82-90.

Gives a list of 90 species occurring in the Silurian strata, near the city of Quebec.

B.

9 **Bäckström** (H.). Causes of magmatic differentiation.

Abstracts: Am. Geol., vol. xiii, pp. 194-195 (½ p.); Am. Nat., vol. xxviii, p. 515 (½ p.).

Noticed in Bibliography and Index for 1892 and 1893.

10 **Bain** (H. Foster). Structure of the Mystic coal basin [Iowa].

Iowa Acad Sci., Proc., vol. 1, pt. iv, pp. 33-36.

Describes the lithologic character of the beds and gives several sections displayed at various localities.

11 —— Sigourney deep well [Iowa].

Iowa Acad. Sci., Proc., vol. i, pt. iv, pp. 36-38.

Gives the section of the well to the depth of 1,888 feet, and discusses the evidences as to age of the formations represented.

12 —— Peculiarities of the Mystic coal seam [Iowa].

Am. Geol., vol. xiii, pp. 407-411.

Describes the occurrence of this coal seam and the associated strata, which, in contrast with the complexity of structure and nonpersistence of the beds of the Coal Measures in other parts of Iowa, has an extent of about 50 miles north and south and 40 miles east and west.

13 **Baldwin** (S. Prentiss). Pleistocene history of the Champlain Valley.

Am. Geol., vol. xiii, pp. 170-184, with map and one figure.

Describes the deltas, moraines, and other glacial deposits of this region and the pre-Glacial and post-Glacial drainage systems.

13*a* **Ballard** (Hetty O.), **Crosby** (W. O.) and. Distribution and probable age of the fossil shells in the drumlins of the Boston basin.

Am. Jour. Sci., 3d ser., vol. xlviii, pp. 486-496.

See Crosby (W. O.) and Ballard (H. O.), No. 106.

13*b* **Barlow** (A. E.). Relations of the Laurentian and Huronian rocks north of Lake Huron.

Review: Am. Geol., vol. xiii. pp. 63-64 (½ p.).

Noticed in Bibliography and Index for 1892 and 1893.

14 **Barrois** (Charles). [Correlation of clastic rocks.]

Int. Cong. Geol., Compte Rendu, 5th session, pp. 172 and 175.

Remarks on the impossibility of comparing in detail the Paleozoic formations of Europe and North America.

15 **Barton** (G. H.). [Remarks on drumlins.]

Bost. Soc. Nat. Hist., Proc., vol. xxvi, pp. 23-25.

Reviews the theory advanced by Warren Upham in a paper on the origin of drumlins.

15*a* **Bascom** (Florence). The structure, origin, and nomenclature of the acid volcanic rocks of South Mountain, Pennsylvania.

Abstracts: Am. Geol., vol. xiii, pp. 122-123; Am. Nat., vol. xxviii, pp. 515-516.

Noticed in Bibliography and Index for 1892 and 1893.

16 **Bashore** (Harvey B.). The Harrisburg terraces [Pennsylvania].

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 98-99.

Describes the gravel deposits in this vicinity.

17 **Bayley** (W. S.). The basic massive rocks of the Lake Superior region. IV. The peripheral phases of the great gabbro mass of northeastern Minnesota.

Jour. of Geol., vol. ii, pp. 814-825.

Describes the petrographic characters of the nonfeldspathic gabbros and the olivine-pyroxene and pyroxene aggregates, and discusses the relation of the basic rocks to the normal gabbro.

17*a* —— A summary of progress in mineralogy and petrography in 1893.

Colby University, Geol. Dept.

Abstract: Am. Geol., vol. xiv, p. 52 (8 l.).

18 **Beachler** (Charles S.). An abandoned Pleistocene river channel in eastern Indiana.

Jour. of Geol., vol. ii, pp. 62-65, with map.

Describes the evidences which indicate the former existence of a river chanel in Rush and Decatur counties in southeastern Indiana.

19 **Becker** (George F.). On certain astronomical conditions favorable to glaciation.

Am. Jour. Sci., 3d ser., vol. xlviii, pp. 95-113, figs. 1-3.

Abstract: Am. Geol., vol. xiv, pp. 191-192.

Discusses the variation of temperature as influenced by solar radiation and the effects of low eccentricity and high obliquity, and includes a calculation of sunshine per unit area. Concludes that the accumulation of glacial ice may be due to a combination of low eccentricity and high obliquity with a favorable disposition of land and water.

20 —— [The genesis of ore deposits.]

Am. Inst. Mg. Engrs., Trans., vol. xxiii, pp. 602-604.

Discusses a paper by F. Posepny on the same subject, noticed in Bibliography and Index for 1892 and 1893.

21 **Beecher** (C. E.). On the mode of occurrence and the structure and development of Triarthrus becki.

Am. Geol., vol. xiii, pp. 38-43, pl. iii.

Describes the peculiar mode of occurrence of the trilobites found in the Utica shale near Rome, N. Y., and describes and figures the structure of the legs and antennæ of Triarthrus becki.

22 —— The appendages of the pygidium of Triarthrus.

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 298-300, pl. vii.

Abstract: Am. Geol., vol. xiii, p. 428 (½ p.).

Describes the appendages attached to the pygidium or caudal shield of Triarthrus.

22a **Beecher** (C. E.) and **Schuchert** (Charles). Development of the brachial supports in Dielasma and Zygospira.

Abstract: Am. Nat., vol. xxviii, p. 267 (⅓ p.).

Noticed in Bibliography and Index for 1892 and 1893.

23 **Bell** (Robert). Pre-Paleozoic decay of crystalline rocks north of Lake Huron.

Geol. Soc. Am., Bull., vol. 5, pp. 357–366, pls. 15–16.

Abstract: Am. Geol., vol. xiii, p. 214 (⅓ p.).

Discusses the evidence of pre-Paleozoic erosion, the conditions affecting this ancient erosion and the contacts of Archean and Paleozoic rocks. Discusses the significance of the absence of Paleozoic deposition and the effect of glacial denudation.

24 **Bergeat** (Alfred). Zur Kenntniss der jungen Eruptivgesteine der Republik Guatemala.

Zeit. der deut. geol. Gesell., Band xlvi, Heft 1, pp. 131–157.

Describes the physiography of the region and the geologic distribution, occurrence, and petrographic characters of the recent eruptive rocks of Guatemala.

25 **Berkey** (Charles P.). Preliminary report of leveling party.

Minn. Geol. and Nat. Hist. Surv., 22d Ann. Rept., pp. 134–140.

Describes the topographic charcter of portions of Cook County, Minn., and includes two profile sections showing the principal elevated regions, and tables showing the elevations of a number of localities above sea level.

26 **Blake** (William P.). The mineral deposits of southwest Wisconsin.

Am. Inst. Mg. Engrs., Trans., vol. xxii, pp. 558–568.

Describes the geology of the region and the character and structure of the ore deposits.

27 —— [The lead and zinc deposits of the Mississippi Valley.]

Am. Inst. Mg. Engrs., Trans., vol. xxii, pp. 621–634.

In discussion of paper by W. P. Jenney on the same subject.

28 —— [The genesis of ore deposits.]

Am. Inst. Mg. Engrs., Trans., vol. xxiii, p. 587 (½ p.).

In discussion of paper on the same subject by F. Posepny.

29 —— [Terrestrial submergence southeast of the American Continent.]

Geol. Soc. Am., Bull., vol. v, p. 21 (½ p.).

In discussion of paper by J. W. Spencer on the same subject.

30 —— Wisconsin lead and zinc deposits.

Geol. Soc. Am., Bull., vol. v, pp. 25–32.

Reviews the literature on these deposits, discusses the relation of deformation to ore deposition, the evidences of deformation and the general distribution of zinc in the Silurian seas, and gives the author's conclusions.

31 —— Trilobites in the "Oil Rock" horizon of the Trenton limestone.

Am. Geol., vol. xiv, pp. 133–134 (correspondence).

Mentions the occurrence of species of Ceraurus, Dalmania, Encrinurus, Orthis, Murchisonia, Orthoceras, Cypricardites, Raphistoma, Hyolithes, Streplelasma, and encrinal stems in the Trenton limestone of Wisconsin.

32 **Blake** (William P.). On the origin of ancient quartz rocks.
Science, vol. xxiii, pp. 141-142.
Discusses the origin of quartzites of pre-Cambrian strata.

32*a* **Boyle** (C. B.). A catalogue and bibliography of North American Mesozoic Invertebrata.
Abstract: Am. Geol., vol. xiv, p. 330 (¼ p.).
Noticed in Bibliography and Index for 1892 and 1893.

33 **Branner** (John C.). Elevations in the State of Arkansas.
Ark. Geol. Surv., Ann. Rept. 1891, vol. ii, pp. 77-152.
Gives the elevations, determined by different methods, of certain points in the State.

33*a* —— Observations upon the erosion in the hydrographic basin of the Arkansas River above Little Rock [Ark.].
Ark. Geol. Surv., Ann. Rept. 1891, vol. ii, pp. 153-166.
Abstract: Jour. of Geol., vol. ii, p. 866 (½ p.).
Noticed in Bibliography and Index for 1892 and 1893.

34 —— Magmatic observations and meridian monuments established in Arkansas.
Ark. Geol. Surv., Ann. Rept. 1891, vol. ii, pp. 168-176.
Describes the location and character of monuments and the magmatic observations of certain points in Arkansas.

35 —— Bibliography of the geology of Arkansas.
Ark. Geol. Surv., Ann. Rept. 1891, vol. ii, pp. 319-340.
Gives a list of papers on the geology of Arkansas, arranged alphabetically by authors' names.

36 —— The geological surveys of Arkansas.
Jour. of Geol., vol. ii, pp 826-836.
Reviews the work of the several geological surveys of Arkansas.

37 **Brewer** (W. M.). Notes on the Alabama gold ores.
Eng. and Mg. Jour., vol. lvii, pp. 57-58.
Describes the gold ore deposits of Tallapoosa County, Ala.

38 **Broadhead** (G. C.). Geological history of the Missouri Paleozoic.
Am. Geol., vol. xiv., pp. 380-388.
Describes the topography of the Ozark plateau, the mode of deposition of the strata and their deformation during Paleozoic time, and the dislocations and erosion that have since taken place.

39 **Brögger** (W. C.). On the formation of pegmatite veins.
Can. Rec. Sci., vol. vi, pp. 33-46 and 61-71.
Reviews the previous theories as to the formation of pegmatite veins and gives a résumé of the author's conclusions, indicating that these veins are magmatic eruptive veins formed under peculiar conditions.

40 **Brooks** (W. K.). The origin of the oldest fossils and the discovery of the bottom of the ocean.
Jour. of Geol., vol. ii, pp. 455-479.
Discusses the evidences which indicate that the fauna of the Lower Cambrian is an approximation to the primitive fauna, and that prior to the Lower Cambrian animal life was represented by minute animals not likely to be preserved as fossils.

41 **Brown** (R. G.). The Georgetown mining district, Montana.

Eng. and Mg. Jour., vol. lviii, pp. 345–346.

Notes on the ore deposits of this region.

42 **Bryson** (John). Lake Ronkonkoma and other glacial features of Long Island [New York].

Am. Geol., vol. xiii, pp. 390–392.

Describes the depression in which this lake occurs and discusses the evidences bearing on the amount of elevation and subsidence the island has undergone during and since the Glacial period.

43 **Bush** (E. Renshaw). The Sudbury nickel region [Ontario].

Eng. and Mg. Jour., vol. lvii, pp. 245–246.

Describes the topography of the region, names the rock varieties in which the nickel and copper occurs, and describes the general occurrence of the nickeliferous pyrrhotite and chalcopyrite. Discusses the origin of the deposits.

C.

44 **Cadell** (H. M.). [Classification of Pleistocene deposits.]

Int. Cong. Geol., Compte Rendu, 5th session, p. 198 (¼ p.).

Describes glacial phenomena of Scotland.

44*a* **California, State Mining Bureau.** Eleventh Report of the State Mineralogist.

Abstract: Am. Nat., vol. xxviii, pp. 335–336 (½ p.).

Noticed in Bibliography and Index for 1892 and 1893.

45 **Call** (R. Ellsworth). On the induration of certain Tertiary rocks in northeastern Arkansas.

Ind. Acad. Sci., Proc., 1893, pp. 219–224, with map.

Describes the outcrops of sandstone in this region, hitherto referred to the Potsdam, but which the author considers to be Tertiary. Discusses the causes of the induration of these sandstones.

46 **Calvin** (Samuel). On the geological position of Bennettites dacotensis Macbride, with remarks on the stratigraphy of the region in which the species was discovered.

Am. Geol., vol. xiii, pp. 79–84; Iowa Acad. Sci., Proc., vol. i, pt. iv, pp. 18–22.

Describes the stratigraphic relations of the formations in the portion of the Black Hills in which Bennettites dacotensis were found and concludes that they represent the Dakota Cretaceous.

47 —— On a new horizon and some new localities for friable sandstone in which the grains are enlarged by secondary deposition of silica in optical continuity with the original nucleus.

Am. Geol., vol. xiii, pp. 225–227.

Describes sandstone beds associated with the Lower Magnesian limestone in Iowa, which are thought to be an equivalent of the New Richmond sandstone of Minnesota and Wisconsin.

48 **Calvin** (Samuel). The Niobrara chalk.

Am. Geol., vol. xiv, pp. 140–161.

Abstract: Jour. of Geol., vol. ii, pp. 755–756.

Describes the distribution and physical characters of the formation. Refers to the literature describing these beds and compares them with the chalk formation of England.

49 **Campbell** (Marius R.). Estillville folio. Virginia, Kentucky, Tennessee.

U. S. Geol. Surv., Geologic Atlas of the United States, folio 12.

Describes the physiography and drainage of the region, the character and occurrence of the Cambrian, Cambro-Silurian, Silurian, Devonian, and Carboniferous strata, and the geologic structure and the coal deposits included in the area of the sheet. Gives the section of several coal outcrops and a table of coal analyses. Includes topographic, colored areal geologic, economic geologic, and structure section maps and a sheet of columnar sections.

50 —— Paleozoic overlaps in Montgomery and Pulaski counties, Virginia.

Geol. Soc. Am., Bull., vol. v, pp. 171–190, pl. 4.

Abstract: Am. Geol., vol. xiii, pp. 147–148 (⅓ p.).

Describes the physical features and the stratigraphy of the Cambrian, Silurian, Devonian, and Carboniferous formations, and discusses the geologic structure of the region.

51 —— Tertiary changes in the drainage of southwestern Virginia.

Am. Jour. Sci., 3d ser., vol. xlviii, pp. 21–29, with map.

Describes the changes that have occurred in the drainage of this region and discusses the evidences indicating that they were caused by local orogenic rather than by epeirogenic movements.

51*a* —— Geology of the Big Stone Gap coal field of Virginia and Kentucky.

Abstract: Am. Geol., vol. xiv, pp. 392–393.

Noticed in Bibliography and Index for 1892 and 1893.

51*b* —— **Hayes** (C. W.) and. Geomorphology of the Southern Appalachians.

Nat. Geog. Mag., vol. vi, pp. 63–126, pls. 4–6.

See Hayes (C. W.) and Campbell (M. R.), No. 264.

51*c* **Canada, Geological Survey.** Annual Report for 1890–91, vol. v.

Abstracts: Am. Geol., vol. xiii, pp. 429–431; Am. Nat., vol. xxviii, p. 336 (7 l).

Noticed in Bibliography and Index for 1892 and 1893.

52 **Case** (E. C.). A geological reconnoissance in southwest Kansas and No Man's Land.

Kans. Univ. Quart., vol. ii, pp. 143–147.

Gives a brief description of the Triassic deposits of this region.

53 —— Traces of a glacier at Kansas City, Mo.

Kans. Univ. Quart., vol. ii, pp. 149–150.

Brief description of the evidences which indicate the former existence of a glacier in this vicinity.

53*a* **Case** (E. C.), **Williston** (S. W.) and. Kansas mosasaurs.
Kans. Univ. Quart., vol. i, pp. 15–32, pls. ii-vi.
See Williston (S. W.) and Case (E. C.), No. 649.

54 **Case** (William H.). The Bertha zinc mines at Bertha, Va.
Am. Inst. Mg. Engrs., Trans., vol. xxii, pp. 511-536.
Describes the geology of the region, presents a geologic map and cross section, and describes the character and occurrence of the ore and the methods of mining employed.

55 **Cazin** (F. M. F.). [The genesis of ore deposits.]
Am. Inst. Mg. Engrs., Trans., vol. xxiii, pp. 604–608.
In discussion of paper by F. Posepny on the same subject describes the character and structure of the ore bodies of the Vermont copper mines.

56 **Chamberlin** (Thomas C.). Pseudo-cols.
Jour. of Geol., vol. ii, pp. 205–206.
Abstract: Am. Geol., vol. xiii, p. 217 (¾ p.)
Discusses the use of the term col and describes the mode of formation of pseudo-cols.

57 —— Proposed genetic classification of Pleistocene glacial formations.
Jour. of Geol., vol. ii, pp. 517–538.
Describes the author's method of classifying the Pleistocene glacial formations, based on the origin of the formations.

58 —— Glacial studies in Greenland.
Jour. of Geol., vol. ii, pp. 649–666 and 768–788, figs. 1–14.
Gives an itinerary of the journey to Greenland and describes the characteristics of the glaciers examined.

59 —— [Drift fringe on Long Island, New York.]
Geol. Soc. Am., Bull., vol. v, p. 16 (⅝ p.).
In discussion of papers by A. A. Wright and E. H. Williams, jr., on glacial phenomena of New Jersey and Pennsylvania.

60 —— [Relation of deformation to ore deposition.]
Geol. Soc. Am., Bull., vol. v, p. 32 (⅛ p.).
In discussion of paper by W. P. Blake on the Wisconsin lead and zinc deposits.

61 —— [Formation of kames, eskers, and moraines.]
Geol. Soc. Am., Bull., vol. v, p. 85 (½ p.).
Discusses the character of the material of which kames, eskers, and moraines are formed.

62 —— [Classification of Pleistocene deposits.]
Int. Cong. Geol., Compte Rendu, 5th session, pp. 176–192 and 207 (⅕ p.).
Discusses the classification of Pleistocene glacial deposits, based upon the origin of the formations.

63 **Chamberlin** (Thomas C.) and **Leverett** (Frank). Further studies of the drainage features of the Upper Ohio Basin.

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 247-283 and p. 483, four maps and five figures.

Abstract: Am. Geol., vol. xiii, pp. 217-219.

Describes the drainage features and erosion of the Upper Ohio tributaries, the old fluvial floors, drift, and terraces. Gives a summary statement of four hypotheses and describes and illustrates by diagrams the ratios of work done.

64 **Charleton** (A. G.). Nickel, its history, uses, and distribution.

Sci. Am. Suppl., vol. xxxvii, pp. 15418-15419.

Discusses the genesis of nickel.

65 **Chester** (Albert H.). Acanthite from Colorado.

School of Mines Quart., vol. xv, pp. 103-104.

Describes crystals of silver sulphide which are considered to belong to this species.

66 —— On caswellite, an altered biotite from Franklin Furnace, N. J. Quartz crystals from Ellenville, N. J.

N. Y. Acad. Sci., Trans., vol. xiii, pp. 181-184.

Describes the chemical and optical characters of a new mineral species, caswellite, and the crystallographic characters of quartz crystals.

67 **Church** (John A.). [Geological distribution of the useful metals in the United States.]

Am. Inst. Mg. Engrs., Trans., vol. xxii, pp. 732-735.

In discussion of paper by S. F. Emmons on the same subject.

68 —— [The genesis of ore deposits.]

Am. Inst. Mg. Engrs., Trans., vol. xxiii, pp. 593-597.

In discussion of paper on the same subject by F. Posepny.

69 **Clark** (William B.). Cretaceous and Tertiary geology.

N. J. Geol. Surv., Rept. for 1893, pp. 329-355.

Contains a general discussion, classification, and description of the formations and describes certain typical section lines across the Cretaceous and Tertiary beds.

70 —— Origin and classification of the greensands of New Jersey.

Jour. of Geol., vol. ii, pp. 161-177.

Abstract: Am. Geol., vol. xiii, p. 210 (½ p.).

Gives a sketch of the stratigraphic features, describes the several formations, and discusses the origin, genesis, and source of the materials of the greensands.

71 —— Climatology and physical features of Maryland.

Maryland State Weather Service, 1st Biennial Rept. for 1892-93, pp. 1-146.

Describes the topography, geologic formations, soils, and climate of Maryland.

71*a* **Clark** (William B.). The Mesozoic Echinodermata of the United States.

Abstract: Am. Geol., vol. xiv, pp. 329–330.

Noticed in Bibliography and Index for 1892 and 1893.

71*b* —— A preliminary report on the Cretaceous and Tertiary formations of New Jersey.

Abstract: Jour. of Geol., vol. ii, pp. 239–240.

Noticed in Bibliography and Index for 1892 and 1893.

71*c* —— **Williams** (George H.) and. Outline of the geology and physical features of Maryland.

Abstract: Am. Jour. Sci., 3d ser., vol. xlvii, p. 320 (½ p.).

See Williams (G. H.) and Clark (W. B.), No. 638.

72 **Clarke** (Frank W.). An occurrence of anorthite and epidote.

Am. Jour. Sci., 3d ser., vol. xlviii, p. 429 (communicated).

Describes the occurrence and chemical composition of these minerals, from Maine.

73 **Clarke** (John M.). Composite generic fundamenta.

Am. Geol., vol. xiii, pp. 286–289 (correspondence).

Describes the variations of the generic type of the genus Leptodesma occurring in Hamilton beds.

74 —— American species of Autodetus and some paramorphic shells from the Devonian.

Am. Geol., vol. xiii, pp. 327–335, figs. 1–13.

Reviews the nomenclature of the genus Autodetus and describes the new species Autodetus beecheri and lindstrœmi and Protocalyptræa styliophila and marshalli, found in the Devonian of New York.

75 —— The early stages of Bactrites.

Am. Geol., vol. xiv., pp. 37–43, pl. ii.

Describes some protoconch-bearing specimens of Bactrites from the Devonian of western New York.

76 —— Nanno, a new cephalopoden type.

Am. Geol., vol. xiv, pp. 205–208, pl. vi.

The material described was obtained from the Trenton shales of Minneapolis and the Galena shales at Chatfield, Minn.

77 —— The succession of the fossil faunas in the section of the Livonia salt shaft [New York].

N. Y. State Mus., 47th Ann. Rept., pp. 327–352.

Gives a list of fossils found in the Livonia salt shaft.

78 —— New or rare species of fossils from the horizons of the Livonia salt shaft [New York].

N. Y. State Mus., 47th Ann. Rept., pp. 355–383, pls. 1–4.

Describes a number of new and rare species from the Devonian found in the Livonia salt shaft.

79 —— Report on field work in Chenango County [N. Y.].

N. Y. State Mus., 47th Ann. Rept., pp. 725–751.

Describes the lithologic character and succession of the Devonian strata in this county and gives a résumé of the results obtained.

80 **Clarke** (John M.). A list of publications relating to the geology and paleontology of the State of New York, 1876–1893.
N. Y. State Mus., 47th Ann. Rept., pp. 755–791.

80*a* —— See **Hall** (J.) and **Clarke** (J. M.), Nos. 235–236*a*.

81 **Claypole** (E. W.). A new species of Carcinosoma.
Am. Geol., vol. xiii, pp. 77–79, pl. iv.
Describes Carcinosoma ingens n. sp. which was described as belonging to the genus Eurysoma in the December number, 1893, of the American Geologist.

82 —— Cladodus ? magnificus, a new selachian.
Am. Geol., vol. xiv, pp. 137–140, pl. v.
Describes a portion of a jaw found in the Cleveland shale, with remarks on the character of the Devonian fish fauna of Ohio.

83 —— On a new placoderm, Brontichthys clarki, from the Cleveland shale.
Am. Geol., vol. xiv, pp. 379–380, pl. xii.
Describes a new genus from the Cleveland shale of Ohio.

84 —— The fossil fishes of Ohio.
Ohio Geol. Surv., vol. vii, pp. 602–619.
Describes the characters of some fossil fishes and sharks from Ohio.

85 —— [Correlation of clastic rocks.]
Int. Cong. Geol., Compte Rendu, 5th session, pp. 166–167 (7 l.).
Remarks on the value of the different methods of geologic correlation.

86 **Cobb** (Collier). Note on the deflective effect of the earth's rotation as shown in streams.
Elisha Mitchell Sci. Soc., Jour., 1893, pp. 26–32.
Gives a map of a portion of North Carolina, describes its drainage systems, and considers that the effect of the earth's rotation is perceptible in this region.

87 —— On the geological history of certain topographical features east of the Blue Ridge.
Elisha Mitchell Sci. Soc., Jour., 1893, pp. 94–97.
Describes certain topographic forms of North Carolina which are considered to have been formed by wave action in post-Cretaceous time.

88 **Coleman** (A. P.). Antholite from Elzivir, Ontario.
Am. Jour. Sci., 3d ser., vol. xlviii, pp. 281–283.
Describes the chemical and physical characteristics of the mineral.

89 —— Inter-Glacial fossils from the Don Valley, Toronto.
Am. Geol., vol. xiii, pp. 85–93.
Describes the lithologic character of the glacial beds in this region, mentions some of the fossils found in them, and discusses the evidences as to the character of the glacial phenomena.

90 —— Notes on the geology of the Rocky Mountains between the Saskatchewan and the Athabasca.
Am. Geol., vol. xiv, pp. 83–92.
Abstract: Am. Nat., vol. xxviii, pp. 880–881.
Describes the topography and geology of a portion of the Rocky Mountains lying between the Saskatchewan and Athabasca rivers, and gives lists of fossils collected at different localities in this region.

91 **Comstock** (Theodore B.). Notes on Arizona mines. I. Silver.
Eng. and Mg. Jour., vol. lvii, p. 103.
Describes briefly the general character of the silver ores in Arizona.

92 **Cooper** (J. G.). On some Pliocene fresh-water fossils of California.
Cal. Acad. Sci., Proc., 2d ser., vol. iv, pp. 166–172, pl. 14.
Describes and figures Margaritana subangulata n. sp. and gives a list of Pliocene fossils found in the Kettelman, Asphalto, Contra Costa, Tassajara, and Santa Clara lake beds.

93 **Cope** (Edward D.). On the structure of the skull in the plesiosaurian Reptilia, and on two new species from the Upper Cretaceous.
Am. Phil. Soc., Proc., vol. xxxiii, pp. 109–113, pl. x.
Describes and figures the skull of Cimoliasaurus snovii Williston from the Niobrara Cretaceous of Kansas and Embaphias circulosus n. gen. et sp. and Elasmosaurus intermedius n. sp. from the Cretaceous of South Dakota.

94 —— Observations on the geology of adjacent parts of Oklahoma and northwest Texas.
Phil. Acad. Nat. Sci., Proc., 1894, pp. 63–68.
Includes brief notes on the Cretaceous of portions of North and South Dakota, on the Permian and Cretaceous of Oklahoma and adjacent portions of Texas, and on the Pleistocene in southeastern Kansas.

95 —— New and little-known Paleozoic and Mesozoic fishes.
Phil. Acad. Nat. Sci., Jour., 2d ser., vol. ix, pp. 427–448, pls. xviii–xx.
Describes two new genera and nine new species of fishes.

96 —— On Cyphornis, an extinct genus of birds.
Phil. Acad. Nat. Sci., Jour., 2d ser., vol. ix, pp. 449–452.
Describes the characters of a new genus found on Vancouver Island, which indicates that the clay bed in which it was found is of Eocene or Oligocene age.

97 —— Extinct Bovidæ, Canidæ, and Felidæ from the Pleistocene of the Plains.
Phil. Acad. Nat. Sci., Jour., 2d ser., vol. ix, pp. 453–459, pls. xxi–xxii.
Describes and figures a new species of Bovidæ and of Felidæ.

98 —— [Correlation of clastic rocks.]
Int. Cong. Geol., Compte Rendu, 5th session, p. 175 (½ p.).
Remarks on the value of vertebrates for purposes of correlation.

99 —— Scott on the Mammalia of the Deep River beds.
Am. Nat., vol. xxviii, pp. 790–791.
Reviews a paper by W. B. Scott on the Mammalia of the Deep River beds.

100 —— Marsh on Tertiary Artiodactyla.
Am. Nat., vol. xxviii, pp. 867–869.
Review of paper by O. C. Marsh.

101 **Cox** (Charles F.). Additional notes on recently discovered deposits of diatomaceous earth in the Adirondacks.
N. Y. Acad. Sci., Trans., vol. xiii, pp. 98–101.
Describes some recently discovered deposits in Herkimer County, N. Y.

102 **Cragin** (F. W.). New and little known Invertebrata from the Neocomian of Kansas.

Am. Geol., vol. xiv, pp. 1-12, pl. i.

Describes 17 new species from the Cretaceous of southern Kansas.

102*a* —— A contribution to the invertebrate paleontology of the Texas Cretaceous.

Review: Am. Geol., vol. xiii, p. 124 (¼ p.).

Noticed in Bibliography and Index for 1892 and 1893.

102*b* **Crane** (Agnes). The evolution of Brachiopoda.

Abstract: Am. Geol., vol. xiii, p. 194 (¼ p.).

Noticed in Bibliography and Index for 1892 and 1893.

103 **Crawford** (J. J.). Twelfth Report of the State Mineralogist.

Cal. State Mg. Bureau, 12th Rept., pp. 1-411.

Describes the occurrence of antimony, silver, lead, asphalt, bitumen, borax, chromic iron, coal, copper, gold, gypsum, iron, magnesite, manganese, natural gas, petroleum, quicksilver, building stones, asbestus, platinum, salt, soda, and zinc, in the various counties of California.

104 **Credner** (H.). [Classification of Pleistocene deposits.]

Int. Cong. Geol., Compte Rendu, 5th session, pp. 195 and 197.

Layers of sand between moraines are not to be considered as important criteria in chronologic classification, on account of their local character.

105 **Crosby** (W. O.). A classification of economic geological deposits based on origin and original structure.

Am. Geol., vol. xiii, pp. 249-268; Tech. Quart., vol. vii, pp. 27-48.

Discusses the general principles of classification and describes the author's system, based on the following primary divisions: (*a*) Deposits of igneous origin (igneous rocks). Heat is the chief agent. (*b*) Deposits of aqueo-igneous origin (pegmatite). Heat and water cooperate. (*c*) Deposits of aqueous origin (sedimentary and vein rocks). Water is the chief agent.

105*a* —— Geology of Boston Basin.

Abstracts: Am. Jour. Sci., 3d ser., vol. xlvii, p. 79 (7 l.); Am. Geol., vol. xiii, pp. 192-193 (¼ p.).

Noticed in Bibliography and Index for 1892 and 1893.

105*b* —— Origin of the coarsely crystalline vein granites or pegmatites.

Abstract: Am. Geol., vol. xiii, pp. 215-216 (¾ p.).

106 —— and **Ballard** (H. O.). Distribution and probable age of the fossil shells in the drumlins of the Boston Basin.

Am. Jour. Sci., 3d ser., vol. xlviii, pp. 486-496.

Gives a list of 55 species collected in the Boston Basin, describes the distribution, and concludes that they are of Glacial and post-Glacial origin and indicate a recession of the ice sheet in this region.

107 **Cross** (Whitman). The laccolitic mountain groups of Colorado, Utah, and Arizona.

U. S. Geol. Surv., 14th Ann. Rept., pt. 2, pp. 165-241, pls. vii-xvi, figs. 25-43.

Reviews the literature of the laccolitic theory. Describes the laccolites of the Henry, West Elk, San Miguel, La Plata, Carriso, El Late, Abajo, and La Sal mountains, Mosquito range, and the intrusive rocks of the Ten Mile district, Colorado. Discusses the chemical and mineralogic characters of laccolitic rocks, the conditions under which they were formed, and the forms and origin of laccolites.

108 —— Pikes Peak folio. Colorado.

U. S. Geol. Surv., Geologic Atlas of the United States, folio 7.

Describes the topographic features, the granite and metamorphic rocks, the occurrence and distribution of the Algonkian, Cambrian, Silurian, Carboniferous, Juratrias, Cretaceous, and Eocene strata. Describes the occurrence and petrographic characters of diabase, syenite, andesite, rhyolite, trachyte, phonolite, and the geographic distribution of the sedimentary and igneous formations and the structural development of the region. Includes a topographic, colored areal geologic, economic geologic, and structure section maps.

109 —— Description of the igneous formations [Anthracite-Crested Butte folio, Colorado].

U. S. Geol. Surv., Geologic Atlas of the United States, folio 9.

Describes the character and occurrence of diorite, porphyrite, porphyritic diorite, granite, rhyolite, and basalt, in the portion of Colorado included within the district named.

110 —— Intrusive sandstone dikes in granite.

Geol. Soc. Am., Bull., vol. v, pp. 225-230, pl. 8.

Abstracts: Am. Jour. Sci., 3d ser., vol. xlvii, p. 142 (7 l.); Am. Geol., vol. xiii, p. 215 (8 l.); Am. Nat., vol. xxviii, pp. 412-413.

Describes the portion of Colorado in which the dikes occur, their characteristics and mode of occurrence. Describes the dike rock and discusses the origin of dikes.

111 —— Itinerary, Nathrop to Salida, Colo.

Int. Cong. Geol., Compte Rendu, 5th session, pp. 423-424.

Describes the geology along the railroad between these points.

112 —— Manitou. Itinerary, Colorado Springs to Denver. Excursion to Morrison. Excursion to Golden [Colo.].

Int. Cong. Geol., Compte Rendu, 5th session, pp. 430-442.

Describes the geology of the Pikes Peak region, the geology of the Denver Basin, and the character of the Juratrias and Cretaceous beds at Morrison and Golden, Colo.

113 **Cubberly** (E. P.). Indiana's structural features as revealed by the drill.

Ind. Dept. Geol. and Nat. Res., 18th Rept., pp. 219-255, with map and 16 colored geologic sections.

Each geologic section is accompanied by a table showing the depth of the well, the formations penetrated, and other data on which the sections are based.

114 **Culver** (G. E.). Some New Jersey eskers.

Science, vol. xxiii, pp. 15-16.

Describes the character of certain eskers in northeastern New Jersey.

115 —— Note on the geology of Itasca County, Minn.

Minn. Geol. and Nat. Hist. Surv., 22d Ann. Rept., pp. 97-114.

Describes the topography of the region and the megascopic characters of the granite, diorite, and greenstones, and the glacial phenomena.

116 **Cunningham** (K. M.). Diatomaceæ.

Ala. Geol. Surv., Rept., on the geology of the Coastal Plain of Alabama, pp. 61-65.

Notes on the fossil Diatomaceæ of Alabama and a list of diatoms occurring at Montgomery.

117 —— Notes on the Microzoa of the Tertiary of south Alabama.

Ala. Geol. Surv., Rept., on the geology of the Coastal Plain of Alabama, pp. 250-254.

Notes on the occurrence of Microzoa in Alabama.

118 —— Notes on the micro-geology of Alabama Cretaceous.

Ala. Geol. Surv., Rept., on the geology of the Coastal Plain of Alabama, pp. 286-289.

Notes on the Cretaceous chalk formation.

119 **Cushing** (H. P.). Preliminary report on the geology of Clinton County, N. Y.

N. Y. State Mus., 47th Ann. Rept., pp. 669-683, with map.

Describes the character and distribution of the pre-Cambrian, Cambrian, and Silurian rocks of this county.

D.

120 **Dale** (T. Nelson). On the structure of the ridge between the Taconic and Green Mountain ranges in Vermont.

U. S. Geol. Surv., 14th Ann. Rept., pt. 2, pp. 525-549, pls. lxvi-lxx, figs. 54-64.

Describes the petrographic, paleontologic, and structural features of the Clarendon, Wallingford, Danby, and Pine Hill sections and gives a general résumé of the evidence showing the structure of the range and age of the formation.

121—— The structure of Monument Mountain, in Great Barrington, Mass.

U. S. Geol. Surv., 14th Ann. Rept., pt. 2, pp. 551-565, pls. lxxi-lxxii, figs. 65-72.

Describes the petrographic character of the Berkshire schist and reviews the evidence indicating the geologic structure of the mountain.

122—— Mount Greylock: its areal and structural geology.

U. S. Geol. Surv., Mon. xxiii, pp. 119-203, pls. xii-xxiii, figs. 30-79.

Gives a list of publications on the geology of the region. Describes the geologic structure of the region, and the lithologic and petrographic characters of the Cambrian and pre-Cambrian rocks.

122*a* **Dale** (T. Nelson). The Rensselaer grit plateau in New York.

Abstract: Am. Geol., vol. xiv, pp. 54–55.

Noticed in Bibliography and Index for 1892 and 1893.

123 **Dall** (William Healey). Notes on the Miocene and Pliocene of Gay Head, Marthas Vineyard, Mass., and on the "Land Phosphate" of the Ashley River district, South Carolina.

Am. Jour. Sci., 3d ser., vol. xlviii, pp. 296–301.

Gives a list of Miocene and Pliocene fossils identified from Gay Head and Chilmark, and describes two new species. Reviews the evidences of the age of the phosphate rock of the Ashley River district and concludes that the fauna are of Miocene facies.

123*a* —— Notes on the Atlantic Miocene.

Abstract: Am. Geol., vol. xiv, p. 202 (½ p.).

124 —— On the species of Mactra from California.

Nautilus, vol. vii, pp. 136–138.

Describes three species, including one new species, from the coast of California.

125 —— and **Stanley-Brown** (J.). Cenozoic geology along the Apalachicola River.

Geol. Soc. Am., Bull., vol. v, pp. 147–170, pl. 3.

Abstract: Am. Geol., vol. xiii, pp. 137–138 (½ p.).

Describes in detail the geology of the localities studied and the geologic structure and succession of the Eocene, Miocene, Pliocene, and Pleistocene beds of this region.

126 **Dana** (James D.). Observations on the derivation and homologies of some articulates.

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 325–329; Annals and Mag. Nat. Hist., vol. xiii, pp. 502–506.

Discusses the derivation of limaloids, crustaceans, arachnids, myrapods, and insects, and in a table shows the relations in body-segments and limbs between these classes.

127 **Darton** (Nelson Horatio). Shawangunk Mountain.

Nat. Geog. Mag., vol. vi, pp. 23–34, pls. 1–3, figs. 1–3.

Abstracts: Sci. Am. Suppl., vol. xxxvii, pp. 15284–15285; Am. Jour. Sci., 3d ser., vol. xlvii, p. 482 (7 l.).

Describes the relations of the Shawangunk grit and the underlying Hudson shales and the character and distribution of the lakes, which are considered to have been formed by glacial action.

128 —— Report on the relations of the Helderberg limestones and associated formations in eastern New York.

N. Y. State Mus., 47th Ann. Rept., pp. 393–422, pls. 1–4, figs. 1–5.

Describes the physiography of the region studied, presents several stratigraphic sections of Upper Silurian strata of central and eastern New York, and describes the lithologic character and succession of the deposits.

129 —— Preliminary report on the geology of Albany County [N. Y.].

N. Y. State Mus., 47th Ann. Rept., pp. 425–455, pls. 1–6, figs. 1–9.

Describes the physiographic features of the county and the lithologic character and stratigraphic relations of the Devonian and Silurian deposits, and includes notes on the Pleistocene geology.

130 **Darton** (Nelson Horatio). Preliminary report on the geology of Ulster County [N. Y.].

N. Y. State Mus., 47th Ann. Rept., pp. 485–566, pls. 1–23, figs. 1–18.

Describes the physiography of the region, the structural relations and the lithologic character and succession of the several members of the Devonian and Silurian formations represented in this county.

131 —— Geology of the Mohawk Valley in Herkimer, Fulton, Montgomery, and Saratoga counties [N. Y.].

N. Y. State Mus., 47th Ann. Rept., pp. 604–623, pls. 1–14.

Describes the exposures of Potsdam sandstone, Calciferous, Birdseye, Black River, and Trenton limestones and Utica shales in the Mohawk Valley of the counties named.

132 —— Geologic relations from Green Pond, New Jersey, to Skunnemunk Mountain, New York.

Geol. Soc. Am., Bull., vol. v, pp. 367–394, pl. xvii.

Abstract: Am. Geol., vol. xiii, pp. 211–212.

Reviews the literature on the geology and describes the Devonian, Silurian, and Cambrian beds of this region. Discusses the structure and gives a sketch of its geologic history.

133 —— Outline of Cenozoic history of a portion of the middle Atlantic slope.

Jour. of Geol., vol. ii, pp. 568–587.

Describes the physiographic features of the Piedmont and Coastal Plain areas in this region, the trenching of the Tertiary baselevel of the Piedmont Plateau, and the character of the Tertiary and Pleistocene deposits, and includes a résumé of the geologic history of the region in Cenozoic time.

134 —— Staunton folio. Virginia, West Virginia.

U. S. Geol, Surv., Geologic Atlas of the United States, folio 14.

Describes the physiographic subdivisions of the Appalachian province, the character and relations of the Cambrian, Silurian, Devonian, and Carboniferous formations, and the geologic structure and mineral resources of the region, including iron, marble, and clays. Includes a topographic, colored areal geologic, economic, and structure section maps and a columnar section.

134*a* —— **McGee,** (W J), **Williams,** (G. H.), **Willis,** (B.), and. Geology of Washington and vicinity.

Int. Cong. Geol., Compte Rendu, 5th sesion, pp. 219–251.

See McGee (W J), Williams (G. H.), Willis (B.), and Darton (N. H.), No. 385.

135 **Davis** (William Morris). Physical geography in the university.

Jour. of Geol., vol.ii, pp. 66–100.

Presents the plan of the author's course in physical geography.

136 —— [Remarks on drumlins.]

Bost. Soc. Nat. Hist., Proc., vol. xxvi, pp. 17–23.

Reviews the paper by W. Upham on the "Origin of drumlins."

137 **Davis** (William Morris). Facetted pebbles on Cape Cod, Massachusetts.

Bost. Soc. Nat. Hist., Proc., vol. xxvi, pp. 166–175, pls. i–ii.

Abstract: Am. Geol., vol. xiii, pp. 146–147.

Describes the occurrence of these pebbles on Cape Cod and discusses the evidences indicating that the beds in which they are found are subaerial deposits. Discusses the relation of facetting to rock structure and the post-Glacial changes of level in this region.

138 —— [Correlation of clastic rocks.]

Int. Cong. Geol., Compte Rendu, 5th session, p. 166 (½ p.).

Remarks on the correlation of rocks as indicated by degradation processes.

139 —— and **Griswold** (L. S.). Eastern boundary of the Connecticut Triassic.

Geol. Soc. Am., Bull., vol. v, pp. 515–530.

Abstracts: Jour. of Geol. vol. ii, pp. 644–645; Am. Geol., vol. xiii, pp. 145–146; Am. Jour. Sci., 3d ser., vol. xlvii, pp. 136–137.

Describes the geologic history of the region and discusses the general characteristics of faults. Discusses the evidences of faulting along the boundary of the Connecticut Triassic and gives the authors' conclusions.

140 **Dawson** (George M.). Geological notes on some of the coasts and islands of Bering Sea and vicinity.

Geol. Soc. Am., Bull., vol. v, pp. 117–146.

Abstracts: Am. Jour. Sci., 3d ser., vol. xlvii, p. 136 (¼ p.); Am. Geol. vol. xiii, p. 137 (¼ p.).

Contains notes on the topography and geology of the islands of Bering Sea.

141 —— Notes on the occurrence of mammoth remains in the Yukon district of Canada and Alaska.

Geol. Soc. London, Quart. Jour., vol. l, pp. 1–8.

Abstract: Can. Rec. Sci., vol. vi, p. 59 (¾ p.).

Gives a historical sketch of the discoveries of mammoth remains in this region. Describes the unglaciated area in Alaska in which these remains occur and the Cordilleran glacier. Discusses the evidences of elevation and subsidence.

142 —— Volcanic rocks of the Huronian.

Science, vol. xxiii, p. 50.

Brief note on the occurrence of volcanic rocks in the vicinity of the Lake of the Woods.

142*a* —— Notes on the geology of Middleton Island, Alaska.

Abstract: Can. Rec. Sci., vol. vi, p. 58 (½ p.).

Noticed in Bibliography and Index for 1892 and 1893.

143 **Dawson** (J. William). Preliminary note on recent discoveries of batrachians and other air-breathers in the coal formation of Nova Scotia.

Can. Rec. Sci., vol. vi, pp. 1–7.

Abstract: Am. Geol., vol. xiii, p. 137 (½ p.).

Refers to the previous discoveries of animal remains in the coal beds of South Joggins. Gives the vertical section of an embedded tree recently found in these deposits, and mentions the fossils found in it.

144 **Dawson** (J. William). Our record of Canadian earthquakes.
Can. Rec. Sci., vol. vi, pp. 8-16.
Gives a list of publications of the records of Canadian earthquakes prior to 1877, and includes a list and description of earthquakes occurring since that time.

145 —— Note on the genus Naiadites, as occurring in the coal formation of Nova Scotia.
Geol. Soc. London, Quart. Jour., vol. l, pp. 435-437, pl. xx.
Describes the occurrence of this genus and its associates in the coal deposits of Nova Scotia.

146 —— The study of fossil plants.
Geol. Soc. Am., Bull., vol. v, pp. 2-5.
Discusses the importance of fossil plants as an aid in determining the geologic age of rocks and climatic conditions.

147 —— Some recent discussions in geology.
Geol. Soc. Am., Bull., vol. v, pp. 101-116.
Abstracts: Am. Geol., vol. xiii, pp. 135-137; Am. Jour. Sci., 3d ser., vol. xlvii, pp. 135-136.
Discusses the correlation of the Cambrian rocks of North America and Great Britain, the forces that have produced mountain ranges, uniformitarianism, the formation of coal, the relation of vegetation to continental movements, the phenomena of the Glacial period, and post-Pleistocene continental movements.

147*a* —— The Canadian Ice age.
William V. Dawson, Montreal, 1893.
Review: Jour. of Geol., vol. ii, pp. 232-235, by T. C. Chamberlin.
Abstracts: Am. Jour. Sci., 3d ser., vol. xlvii, pp. 146-147 (½ p.); Am. Geol., vol. xiii, pp. 116-121; Can. Rec. Sci., vol. vi, pp. 113-115.

148 **Dean** (Bashford). Contributions to the anatomy of Dinichthys.
N. Y. Acad. Sci., Trans., vol. xii, p. 187.
Abstract: Am. Geol., vol. xiii, pp. 357-358 (8 l.).

149 —— A new cladodont from the Ohio Waverly, Cladoselache newberryi n. sp.
N. Y. Acad. Sci., Trans., vol. xiii, pp. 115-118, pl. 1.
Describes and figures specimens from the sub-Carboniferous of Ohio.

150 —— Contributions to the morphology of Cladoselache (Cladodus).
Jour. of Morph., vol. ix, pp. 87-114, pl. vii.
Suggests the name Cladoselache for that of Cladodus for the American form. Discusses the relationships under the different structural characters.

151 **DeKalb** (Courtenay). The new gold fields of the Mosquito coast of Nicaragua.
Eng. and Mg. Jour., vol. lvii, pp. 294-295.
The gold occurs in placers in the Matagalpa Mountains, of small extent but very rich, and in "pockets." The mountains are said to be flanked by Carboniferous limestones overlain by Permian red sandstones and shales which have been covered by diorite flows, and the gold occurs along the contact of the shales and diorite mass.

152 **Diener** (C.). [Classification of Pleistocene deposits.]

Int. Cong. Geol., Compte Rendu, 5th session, p. 197 (¼ p.).

Considers that fossil remains are not proof of the nonexistence of glaciers in the vicinity in which the fossils occur.

153 **Diller** (Joseph Silas). Tertiary revolution in the topography of the Pacific Coast.

U. S. Geol. Surv., 14th Ann. Rept., pt. 2, pp. 397-434, pls. xl-xlvii, figs. 45-48; Jour. of Geol., vol. ii, pp. 32-54.

Abstract: Am. Geol., vol. xiii, p. 354 (½ p.).

Describes the topography of the Pacific Coast, the ancient baselevel of erosion in northern California, and the character of the deposits upon its borders. Discusses the evidence as to the age of the baseleveling, the conditions during Cretaceous, Eocene, and Miocene times, and the deformation of the baselevel.

154 —— and **Schuchert** (Charles). Discovery of Devonian rocks in California.

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 416-422.

Abstract: Am. Nat., vol. xxviii, p. 796 (½ p.).

Describes the different outcrops of Devonian rocks that have been found in California, with notes on the fossils collected from them, and discusses their correlation with Devonian strata of other regions.

155 —— and **Stanton** (T. W.). The Shasta-Chico series.

Geol. Soc. Am., Bull., vol. v, pp. 435-464.

Abstracts: Am. Jour. Sci., 3d ser., vol. xlvii, p. 141 (½ p.); Am. Geol., vol. xiii, p. 208 (6 l.); Am. Nat., vol. xxviii, p. 1024 (¾ p.).

Reviews the literature of the Cretaceous deposits of the Pacific Coast. Describes three sections of the Cretaceous deposits and gives lists of fossils found at different horizons. Discusses the faunal relations of the beds, the deformation during and subsequent to their deposition, and the correlation of the series with the Cretaceous of other parts of North America.

156 **Dodge** (R. E.). The geographical development of alluvial river terraces.

Bost. Soc. Nat. Hist., Proc., vol. xxvi, pp. 257-273.

Abstract: Am. Geol., vol. xiv, p. 397 (½ p.).

Describes the formation of alluvial terraces and plains, the cycle and development of a normal river, and normal, subnormal, and accidental alluvial terraces. Discusses the conditions of terrace formation and gives the author's conclusions.

157 —— Additional species of Pleistocene fossils from Winthrop, Mass.

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 100-104.

Mentions the species heretofore found in a drumlin in Boston Harbor, and also others recently found by the author. Considers that ocean waters were warmer both prior and subsequent to the advance of the ice sheet, and discusses the causes of this phenomenon.

158 —— Continental phenomena illustrated by ripple marks.

Science, vol. xxiii, pp. 38-39.

Describes ripple marks occurring on the coast of Massachusetts, which are compared to the formation of a continental shelf similar to that along the eastern coast of North America.

159 **Dryer** (Charles R.). The geology of Noble County [Ind.].

Ind. Dept. Geol. and Nat. Res., 18th Rept., pp. 17-32.

Describes the glacial deposits of the county and gives the sections displayed by several artesian wells, showing the presence of Devonian and Silurian strata.

160 —— Report upon the geology of Lagrange County [Ind.].

Ind. Dept. Geol. and Nat. Res., 18th Rept., pp. 72-82.

Describes the character and distribution of the glacial beds of the county.

161 —— The drift of the Wabash-Erie region. A summary of results.

Ind. Dept. Geol. and Nat. Res., 18th Rept., pp. 83-90.

Describes the distribution of the moraines and the movements of the ice sheet in this region.

162 **Dumble** (E. T.). The Cenozoic deposits of Texas.

Jour. of Geol., vol. ii, pp. 549-567.

Describes the lithologic character of the Cenozoic deposits of Texas and gives lists of fossils found at different horizons and localities.

163 **Dunn** (R. L.). Auriferous conglomerate in California.

Cal. State Mg. Bureau, 12th Rept., pp. 459-471, with map.

Describes an auriferous conglomerate of peculiar character occurring in Siskiyou County. Discusses the evidences bearing on its fluviatile origin and on the source of the gold. Compares this deposit with the auriferous conglomerate of South Africa.

E.

164 **Eakle** (A. S.). On allanite crystals from Franklin Furnace, N. J.

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 436-439; N. Y. Acad. Sci., Trans., vol. xiii, pp. 102-107.

Abstract: Am. Nat., vol. xxviii, p. 877 (6 l.).

Describes the crystallographic characters of crystals from the Trotter mine.

165 **Eastman** (Charles R.). Beiträge zur Kenntniss der Gattung Oxyrhina, mit besonderer Berücksichtigung von Oxyrhina mantelli Agassiz.

Paleontographica, Band xli, pp. 149-192, pls. xvi-xviii.

Describes Oxyrhina mantelli from the Cretaceous of Kansas and gives a summary of the species of Oxyrhina.

166 **Eldridge** (George H.). Description of the sedimentary formations [Anthracite-Crested Butte folio, Colorado.]

U. S. Geol. Surv., Geologic Atlas of the United States, folio 9.

Describes the Archean, Cambrian, Silurian, Carboniferous, Juratrias, and Cretaceous formations of the region, the geologic structure and the occurrence of coal in the Laramie, and gives four tables of analyses of the coals.

167 —— A geological reconnoissance in northwest Wyoming.

U. S. Geol. Surv., Bull., No. 119, 72 pp., pls. i-iv, fig. 1.

Describes the topography of the Big Horn Mountain region, the general character of the Archean, Cambrian, Silurian, Carboniferous, Trias, Jura, Cretaceous, and Tertiary formations, the structure of the mountain ranges, and the occurrence of coal, petroleum, building materials, and gold.

168 **Eldridge** (George H.). Artesian wells of eastern Dakota.

Int. Cong. Geol., Compte Rendu, 5th session, p. 318.

Describes the character of the strata from which artesian water is obtained and gives the depths of the wells.

169 **Elftman** (Arthur Hugo). Preliminary report of field work during 1893 in northeastern Minnesota.

Minn. Geol. and Nat. Hist. Surv., 22d Ann. Rept., pp. 141–180.

Describes the topography of portions of Lake County and the distribution and petrographic characters of the granite, actinolite-magnetite schist, gabbro, red rock, diabase, and anorthosyte of northeastern Minnesota.

170 **Ells** (R. W.). Mica deposits in the Laurentian of the Ottawa district.

Geol. Soc. Am., Bull., vol. v, pp. 481–488.

Abstract: Am. Geol., vol. xiii, p. 215 (6 l.).

Describes the metamorphosed sedimentaries and intrusive rocks of this district, the occurrence of apatite and mica, and the differences in the mica-apatite deposits.

171 **Emmons** (Samuel Franklin). Description of the Elk Mountains [Anthracite-Crested Butte folio, Colorado].

U. S. Geol. Surv., Geologic Atlas of the United States, folio 9.

Gives a historical sketch of the geology of the region and describes the clays, iron ore, and precious metal deposits. Includes a topographic, colored geologic, economic, and structure section maps of each of the districts and a sheet of columnar sections.

172 —— Geological distribution of the useful metals in the United States.

Am. Inst. Mg. Engrs., Trans., vol. xxii, pp. 53–95 and 737–738.

Describes the geologic occurrence in different parts of the United States of iron, manganese, nickel, tin, copper, lead, zinc, quicksilver, gold, and silver, and gives a summary of conclusions concerning the genesis of their minerals.

173 —— [The genesis of ore deposits.]

Am. Inst. Mg. Engrs., Trans., vol. xxiii, pp. 597–602.

Discussion of paper by F. Posepny on the same subject.

174 —— Congrès Géologique International, Compte Rendu de la 5^{me} session, Washington, 1891, ix + 529 pp., pls. i–xxi, figs. 1–39. Edited by S. F. Emmons, secretary.

Contains a historical sketch of the Congress, report of the sessions, a description of the geology of Washington and vicinity, the geology of the region traversed by the excursion to the Rocky Mountains and the Grand Canyon of the Colorado, and of the excursion to Lake Superior.

174*a* —— Guidebook of an excursion to the Rocky Mountains.

John Wiley & Sons, 1894, New York.

Describes the geology along the route traversed by the western excursion of the International Congress of Geologists from Washington, D. C., to Chicago, St. Paul, Yellowstone National Park, Snake Plains, Great Salt Lake, Leadville, Denver, Canyon of the Colorado, Kansas City, Chicago, Niagara Falls, and to New York City.

Extract from Compte Rendu, Int. Cong. Geol., 5th session.

175 **Emmons** (Samuel Franklin). From Chicago to the Mississippi River. Itinerary.

Int. Cong. Geol., Compte Rendu, 5th session, pp. 298-301.

Describes the glacial phenomena of the region and the outcrops of the Cambrian beds.

176 —— Livingston to the Snake Plains. Itinerary. Butte City to Pocatello. The Snake Plains.

Int. Cong. Geol., Compte Rendu, 5th session, pp. 367-374.

Describes the geology along the route of travel of the excursion of the International Congress of Geologists in this region and the geologic history of the Snake Plains.

177 —— The Wasatch Mountains and the geological panorama of the Wasatch range.

Int. Cong. Geol., Compte Rendu, 5th session, pp. 381-391.

Describes the geologic history of this range, the outcrops of the strata, and the structure of the mountain range.

178 —— Itinerary. Spanish Fork Canyon, Utah, to Grand Junction, Colo.

Int. Cong. Geol., Compte Rendu, 5th session, pp. 397-402.

Describes the geology along the railroad between the points named.

179 —— The Rocky Mountains of Colorado. Itinerary, Grand Junction to Glenwood Springs and Aspen, Glenwood Springs to Leadville and Nathrop, and Salida to Canyon City, Colo.

Int. Cong. Geol., Compte Rendu, 5th session, pp. 403-426.

Describes the geologic history and general structure of the Rocky Mountains and the local geology along the railroad between the points mentioned.

180 —— Itinerary, Canyon City to Colorado Springs [Colo.].

Int. Cong. Geol., Compte Rendu, 5th session, pp. 428-429.

Describes the geology along the railroad between these points.

181 —— The Great Plains of Colorado and Kansas. Itinerary, Denver to Kansas City.

Int. Cong. Geol., Compte Rendu, 5th session, pp. 443-448.

Describes the geologic features of the Great Plains and the local geology along the route traversed by the excursion.

182 —— Excursion to the Canyon of the Colorado. Itinerary, Denver, Colo., to Albuquerque, N. Mex.

Int. Cong. Geol., Compte Rendu, 5th session, pp. 464-468.

Describes the local geology along the route traversed.

183 —— Bibliography of the geology of the excursion to the Rocky Mountains.

Int. Cong. Geol., Compte Rendu, 5th session, pp. 482-487.

Gives a list of 123 publications relating to the geology along the route traversed by the western excursion of the International Congress of Geologists.

184 **Emmons** (Samuel Franklin) and **Merrill** (G. P.). Geological sketch of Lower California.

Geol. Soc. Am., Bull., vol. v, pp. 489-514, pl. 19.

Abstract: Am. Geol., vol. xiii, pp. 209-210.

Describes the physical features and reviews previous descriptions of the geology of Lower California. Describes the general structure and the occurrence of Eocene and Cretaceous beds, and gives a list of fossils found at different horizons.

185 **Eyerman** (John). Vertebrate paleontology at the Columbian Exposition; a brief notice.

Am. Geol., vol. xiii, pp. 47-48.

Mentions the genera and species of vertebrates from various countries exhibited at the World's Columbian Exposition.

186 —— Preliminary notice of a new species of Temnocyon and a new genus from the John Day Miocene of Oregon.

Am. Geol., vol. xiv, pp. 320-321.

Gives a brief description of the new species and of a new genus, Hypotemnodon.

F.

186*a* **Faber** (C. L.), **Miller** (S. A.) and. New species of fossils from the Hudson River group, and remarks upon others.

Cin. Soc. Nat. Hist., Jour., vol. xvii, pp. 22-33.

See Miller (S. A.) and Faber (C. L.], No. 414.

186*b* —— Description of some Cincinnati fossils.

Cin. Soc. Nat. Hist., Jour., vol. xvii, pp. 137-158.

See Miller (S. A.) and Faber (C. L.), No. 415.

187 **Fairbanks** (H. W.). Red Rock, Goler, and Summit mining districts, in Kern County [Cal.].

Cal. State Mg. Bureau, 12th Rept., pp. 456-458.

Describes the occurrence of gold in the wash from the conglomerate and sedimentary strata of this region.

188 —— Preliminary report on the mineral deposits of Inyo, Mono, and Alpine counties [Cal.].

Cal. State Mg. Bureau, 12th Rept., pp. 472-478.

Describes the topography and mineral resources of these counties in southeastern California.

189 —— Geology of a section of Eldorado County [Cal.].

Cal. State Mg. Bureau, 12th Rept., pp. 479-481.

Describes the gold-quartz veins of a portion of this county separated from the "mother lode" by a diabase ridge.

190 —— Geology of northern Ventura, Santa Barbara, San Luis Obispo, Monterey, and San Benito counties [Cal.].

Cal. State Mg. Bureau, 12th Rept., pp. 493-526.

Describes the pre-Cretaceous, Cretaceous, and Miocene beds of these counties and gives the author's summary of conclusions.

191 **Fairbanks** (H. W.). Notes on some localities of Mesozoic and Paleozoic in Shasta county, Cal.

Am. Geol., vol. xiv, pp. 25–31.

Describes the geologic structure, lithologic character, and fauna of the Jurassic, Triassic, Carboniferous, and Devonian strata found in this region.

192 —— A remarkable folded vein in the Ready Relief Mine [Cal.].

Eng. and Mg. Jour., vol. lvii, pp. 321–322.

Describes the apparent folding of mica-schist and gneiss in the Peninsula range of San Diego County, Cal., and discusses the cause of the phenomenon.

193 —— Some remarkable hot springs and associated mineral deposits in Colusa County, Cal.

Science, vol. xxiii, pp. 120–121.

Describes the occurrence of hot springs and the associated gold and quicksilver deposits in this county.

194 **Fairchild** (Herman Le Roy). The evolution of the ungulate mammals.

Abstract: Roch. Acad. Sci., Proc., vol. ii, pp. 206–209.

Describes the evolution of the Artiodactyla and Perissodactyla.

195 —— The geological history of Rochester, N. Y.

Roch. Acad. Sci., Proc., vol. ii, pp. 215–223.

Gives a condensed section of the strata at Rochester and describes the process of deposition in Silurian and Devonian times and the character of the Glacial deposits.

196 —— The length of geologic time.

Roch. Acad. Sci., Proc., vol. ii, pp. 263–266.

Reviews the recent literature on the subject and gives the estimates of different writers.

197 **Foerste** (Aug. F.). Fossils of the Clinton group in Ohio and Indiana.

Ohio Geol. Surv., vol. vii, pp. 516–601.

Describes fossils found in Clinton rocks of these States, including several new species.

198 —— The Upper Vicksburg Eocene and the Chattahoochee Miocene of southwest Georgia and adjacent Florida.

Am. Jour. Sci., 3d ser., vol. xlviii, pp. 41–54, with sketch map.

Describes certain exposures of the Eocene and Miocene in this region and correlates them with other deposits of Georgia.

199 **Fogh** (Carl S.). Some geological features of the mine of Velardena, Mexico.

Eng. and Mg. Jour., vol. lvii, pp. 29–30.

Describes the ore bodies and the dikes which cut them.

200 **Fontaine** (William Morris). Notes on some fossil plants from the Trinity division of the Comanche series of Texas.

U. S. Nat. Mus., Proc., vol. xvi, pp. 261-282, pls. xxxvi–xliii.

Discusses the lithologic character of the bed in which the fossils were found and the characteristics of the plants collected, including eight new species.

201 **Frazer** (Persifor). The sixth session of the International Congress of Geologists.
Am. Geol., vol. xiv, pp. 259-271.
Gives an account of the excursions and proceedings of this session held at Zurich, Switzerland, in August, 1894.

202 —— [On the red horizons.]
Am. Phil. Soc., Proc., vol. xxxiii, pp. 216-217.
Discusses a paper by B. S. Lyman on the same subject.

203 **Frech** (F.). [Correlation of clastic rocks.]
Int. Cong. Geol., Compte Rendu, 5th session, pp. 171-172 (½ p.).
Remarks on the comparison of the middle Paleozoic faunas of Europe and North America.

204 —— Section in Congress Canyon opposite Point Sublime [Ariz.].
Int. Cong. Geol., Compte Rendu, 5th session, pp. 476-481.
Describes exposures of Archean, Algonkian, Cambrian, and Carboniferous rocks in this canyon, and gives the author's conclusions.

205 **Fultz** (Francis M.). Interruption during the deposition of the Burlington limestone.
Am. Geol., vol. xiv, pp. 246-249.
Discusses the evidences of disturbances during the Burlington epoch in the Mississippi Valley.

206 —— Evidences of disturbance during the deposition of the Burlington limestones.
Iowa Acad. Sci., Proc., vol. i, pt. iv, pp. 56-58.
Discusses the disturbances occurring in the Burlington limestone as indicated by changes in fossil forms, lithologic characters, erosion, and unconformability.

G.

207 **Gaudry** (A.). [Classification of Pleistocene deposits.]
Int. Cong. Geol., Compte Rendu, 5th session, pp. 192-193.
Remarks on the desirability of a chronological classification of Pleistocene deposits.

208 **Geer** (Gerard de). [Correlation of clastic rocks.]
Int. Cong. Geol., Compte Rendu, 5th session, pp. 155-156 (½ p.).
Remarks on statistical analyses of fossil faunas, with special reference to the number of individuals found.

209 —— [Classification of Pleistocene deposits.]
Int. Cong. Geol., Compte Rendu, 5th session, pp. 193-194, 196 and 198.
Remarks on the importance of a genetic classification of Pleistocene deposits and the possibility of a local chronologic classification.

209*a* **Geikie** (Archibald). Text Book of Geology, third edition.
Macmillan & Co., London and New York, 1893.
Review: Am. Geol., vol. xiii, pp. 66-70.

209*b* **Geikie** (James). The great Ice age.
Third edition, London, Edward Stanford.
Review: Jour. of Geol., vol. ii, pp. 730-747, by R. D. Salisbury.

209*c* **Gibson** (A. M.). Report on the coal measures of Blount Mountain.
Abstracts: Am. Jour. Sci., 3d ser., vol. xlvii, p. 319 (8 l.); Am. Geol., vol. xiii, p. 284 (⅛ p.).
Noticed in Bibliography and Index for 1892 and 1893.

210 **Gilbert** (Grove Karl). [Correlation of clastic rocks.]
Int. Cong. Geol., Compte Rendu, 5th session, pp. 151-155.
Discusses the physical and biotic methods of correlation of rocks.

211 —— Physical geography of the region.
Int. Cong. Geol., Compte Rendu, 5th session, pp. 261-267.
Describes the physical and climatic features of the parts of the United States traversed by the Rocky Mountain excursion of the International Congress of Geologists.

212 —— From the Ohio to the Mississippi River. General sketch.
Int. Cong. Geol., Compte Rendu, 5th session, pp. 289-290.
Mentions the different exposures of Silurian, Devonian, and Carboniferous rocks and describes the glacial phenomena of the region traversed by the geological excursion.

213 —— Great Salt Lake and Lake Bonneville. Fault Scarps. Itinerary, Pocatello, Idaho, to Salt Lake City, Utah.
Int. Cong. Geol., Compte Rendu, 5th session, pp. 374-380.
Describes the geologic history of Lake Bonneville, the fault scarps of the mountains of the Great Basin, and the geology along the railroad from Pocatello to Salt Lake City.

214 —— Great Salt Lake Valley, and Itinerary, Salt Lake City to Spanish Fork Canyon [Utah].
Int. Cong. Geol., Compte Rendu, 5th session, pp. 391-397.
Describes the geologic history of Great Salt Lake Valley and the local geology along the railroad to Spanish Fork Canyon.

215 —— Itinerary, Chicago to Niagara Falls.
Int. Cong. Geol., Compte Rendu, 5th session, pp. 453-458.
Describes the local geology between Chicago and Niagara Falls, through Michigan and the Province of Ontario, and the geologic history of Niagara Falls.

216 —— Itinerary, Albuquerque, N. Mex., to Flagstaff, Ariz., and to the Grand Canyon.
Int. Cong. Geol., Compte Rendu, 5th session, pp. 468-474.
Describes the geology along the route traversed by the western excursion of the International Congress of Geologists.

217 —— The name "Newark" in American stratigraphy.
Jour. of Geol., vol. ii, pp. 55-59.
Discusses the principles of stratigraphic nomenclature in reference to the use of the term "Newark" in geologic literature.

218 —— Continental problems of geology.
Smith. Inst., Ann. Rept., 1891-92, pp. 163-173.
Noticed in Bibliography and Index for 1892 and 1893.

218*a* —— The chemical equivalence of crystalline and sedimentary rocks.
Abstract: Am. Geol., vol. xiii, pp. 213-214.

219 **Gorby** (S. S.). [Natural resources of Indiana.]

Ind. Dept. Geol. and Nat. Res., 18th Rept., pp. 9-16.

Reviews the developments in the coal, building stone, clays, gas, and petroleum industries of Indiana in 1893.

220 **Grabau** (Amadeus W.). The pre-Glacial channel of the Genesee River.

Bost. Soc. Nat. Hist., Proc., vol. xxvi, pp. 359-369.

Abstract: Am. Geol., vol. xiv, pp. 397-398 (½ p.).

Describes the modern channel of the river, the topography of the adjacent region, the relations of the Genesee and Wyoming valleys and the Dansville-Rochester Valley, and gives a summary of conclusions.

221 **Grant** (Uly S.). The State of Minnesota.

Int. Cong. Geol., Compte Rendu, 5th session, pp. 302-311.

Describes the topography, the outcrops of Archean and Algonkian, Cambrian, and Silurian formations, and the glacial deposits of the portion of the State crossed by the excursion.

222 —— La Crosse to Minneapolis and Minneapolis to Moorhead. Itinerary.

Int. Cong. Geol., Compte Rendu, 5th session, pp. 312-317.

Describes the local geology along the route traversed by the excursion of the International Congress of Geologists.

223 —— The geology of Kekequabic Lake, in northeastern Minnesota, with special reference to an augite soda-granite.

Minn. Geol. and Nat. Hist. Surv., 21st Ann. Rept., pp. 9-58, pls. i-ii, figs. 1-4.

Describes the topography and reviews the previous literature on the region. Describes the ancient clastic and igneous rocks and the field relations and petrographic characters of the granite.

224 —— Preliminary report of field work during 1893 in northeastern Minnesota.

Minn. Geol. and Nat. Hist. Surv., 22d Ann. Rept., pp. 67-78.

Describes the topography and the lithologic character and structure of the Animike and Keweenawan beds of the region.

225 —— Volcanic rocks in the Keewatin of Minnesota.

Science, vol. xxiii, p. 17.

Describes the petrographic characteristics of some volcanic rocks occurring in Keewatin strata.

226 —— Note on the Keweenawan rocks of Grand Portage Island, north coast of Lake Superior.

Am. Geol., vol. xiii, pp. 437-439.

Describes the sedimentary and igneous rocks of this island and considers that the former belong to the lower part of the Keweenawan.

227 **Gresley** (W. S.). Cone-in-cone: how it occurs in the Devonian series in Pennsylvania, United States of America, with further details of its structure.

Geol. Soc. London, Quart. Jour., vol. l, pp. 731-739, pls. xxxv-xxxvi.

Abstract: Am. Geol., vol, xiv, pp. 399-400 (½ p.).

Describes the occurrence of cone-in-cone structure in Devonian beds of Pennsylvania.

228 **Gresley** (W. S.). The "slate binders" of the "Pittsburg" coal bed.

Am. Geol., vol. xiv, pp. 356-365, figs. 1-2.

Describes the character of the slate partings and discusses the different theories which may account for the formation of similar beds.

229 **Grimsley** (G. Perry). The granites of Cecil County, in northeastern Maryland.

Cin. Soc. Nat. Hist., Jour., vol. xvii, pp. 59-67, pls. 4-5, and pp. 78-114.

Abstracts: Jour. of Geol., vol. ii, pp. 865-866; Am. Geol., vol. xiv, p. 398 (½ p).

Describes the rock exposures and the microscopic characters of the granite, diorite, staurolitic mica-schist, and granite-gneiss found in this region. Gives a summary of conclusions.

229*a* **Griswold** (L. S.), **Davis** (W. M.) and. Eastern boundary of the Connecticut Triassic.

Geol Soc. Am., Bull., vol. v, pp. 515-530.

See Davis (W. M.) and Griswold (L. S.), No. 139.

229*b* **Gulliver** (F. P.). Ice sheet on Newtonville sand plain.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xlii, p. 178 (½ p.)

Noticed in Bibliography and Index for 1892 and 1893.

230 **Gurlt** (Adolf). On a remarkable deposit of wolfram ore in the United States.

Am. Inst. Mg. Engrs., Trans., vol. xxii, pp. 236-242.

Describes an occurrence of wolfram ore in Fairfield County, Conn., in crystalline limestone and gneiss.

H.

231 **Hague** (Arnold). The great plains of the North. General sketch. Itinerary from Jamestown, N. Dak., to Livingston, Mont.

Int. Cong. Geol., Compte Rendu, 5th session, pp. 319-325.

Describes the general geologic features of the great plains and the local geology of the route traversed by the Rocky Mountain excursion of the International Congress of Geologists.

232 —— The Yellowstone Park.

Int. Cong. Geol., Compte Rendu, 5th session, pp. 336-359.

Describes the geologic history of the park and the physical and geologic features of the route through the park traversed by the excursion.

232*a* —— Geologic history of the Yellowstone National Park.

Smith. Inst., Ann. Rept., 1891-92, pp. 133-151.

Noticed in Record of North American Geology for 1887-1889.

233 **Hall** (James). The Livonia salt shaft; its history and geological relations, etc.

N. Y. State Mus., 47th Ann. Rept., pp. 205-214.

Gives an account of the geologic work done during the sinking of the Livonia shaft and describes the relations of the formations.

234 **Hall** (James). [Correlation of clastic rocks.]

Int. Cong. Geol., Compte Rendu, 5th session, p. 170 (½ p.).

Remarks on the importance of considering both physical and faunal characters and the unequal value of fossils in the correlating of rocks.

235 —— and **Clarke** (J. M.). Paleontology of New York, vol. viii, pt. 2.

N. Y. State Mus., 47th Ann. Rept., pp. 797–851.

Includes a synopsis of contents of vol. viii, pt. ii, and a summary of "The evolution of the genera of the Paleozoic Brachiopoda" and description of new species figured in the same volume.

236 —— —— An introduction to the study of the Brachiopoda, intended as a handbook for the use of students. Part II.

N. Y. State Mus., 47th Ann. Rept., pp. 945–1137.

Continues the description of genera began in part i, discusses the evolution and classification of the genera of the Brachiopoda, and gives a table of classification and an alphabetical index to genera and subgenera of the Brachiopoda.

236*a* —— —— An introduction to the study of the genera of Paleozoic Brachiopoda, vol. viii, part ii, fascicle i.

Abstracts: Am. Jour. Sci., 3d ser., vol. xlvii, p. 319 (½ p.); Am. Jour. Sci., 3d ser., vol. xlviii, pp. 71–72.

Noticed in Bibliography and Index for 1892 and 1893.

237 **Hallock** (William). Note on further observations of temperature in the deep well at Wheeling, W. Va.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xlii, pp. 173–175.

In tabular form shows the temperature of the water which had leaked into the well to a depth of 3,196 feet.

238 **Halse** (Edward). Notes on some gold-bearing veins of Zacatecas, Mexico.

Eng. and Mg. Jour., vol. lviii, p. 78 and pp. 105–107.

Notes on the vein structure and character of the ore.

239 —— Gold in Zacatecas, Mexico.

Eng. and Mg. Jour., vol. lviii, pp. 605–606.

Brief description of the ore deposits.

240 **Harrington** (B. J.). The composition of limestones and dolomites from a number of geological horizons in Canada.

Can. Rec. Sci., vol. vi, pp. 27–32.

Gives the chemical composition of Cambrian, Silurian, Carboniferous, and Triassic limestones from different localities of Canada.

241 —— On nepheline, sodalite, and orthoclase from the nepheline syenite of Dungannon, Hastings County, Ontario.

Am. Jour. Sci., 3d ser., vol. xlviii, pp. 16–18.

Abstract: Am. Geol., vol. xiv, p. 68 (5 l.).

Describes the chemical composition of the minerals mentioned.

242 **Harris** (Gilbert D.). The Tertiary geology of southern Arkansas.

Ark. Geol. Surv., Ann. Rept., 1892, vol. ii, pp. 1-207, with geologic map, pls. i-vii, and figs. 1-34.

Abstracts: Jour. of Geol., vol. ii, p. 867 (½ p.); Am. Geol., vol. xiv, pp. 394-395 (½ p.).

Reviews the literature on the Tertiary of this region. Describes the character of the rocks on which the Tertiary beds were deposited, the different stages of the Tertiary epoch and the fossil fauna, and includes the author's summary.

243 —— On the geological position of the Eocene deposits of Maryland and Virginia.

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 391-304, figs. 1-3.

Reviews previous determinations of fossils collected in this region and gives a general section of the Eocene series of the Southern States.

244 **Harris** (Hunter L.). A new instance of stream capture.

Bost. Soc. Nat. Hist., Proc., vol. xxvi, pp. 27-29.

Describes briefly the drainage of Hominy Creek and Pigeon River, in North Carolina.

245 **Harris** (T. W.). The kames of the Oriskany Valley [New York].

Am. Geol., vol. xiii, pp. 384-390.

Describes the drainage systems of central and western New York and the glacial deposits of the Oriskany Valley.

246 **Hastings** (J. B.). Some notes on Idaho mines.

Eng. and Mg. Jour., vol. lvii, pp. 267-268 (correspondence).

Describes placer deposits of Snake River Valley.

247 —— The Boise Basin, in Idaho.

Sci. Am. Suppl., vol. xxxviii, pp. 15540-15541; Eng. and Mg. Jour., vol. lviii, p. 56.

Describes the placer deposits and the character and structure of the quartz veins from which the placer gold was derived.

248 **Hatcher** (J. B.) A median horned rhinoceros from the Loup Fork beds of Nebraska.

Am. Geol., vol. xiii, pp. 149-150.

Names and describes Teleoceras major, a new genus from the Loup Fork beds of Nebraska.

249 —— Discovery of Diceratherium, the two-horned rhinoceros, in the White River beds of South Dakota.

Am. Geol., vol. xiii, pp. 360-361 (correspondence).

Describes the type specimen found in the Oreodon beds (Protoceras beds of Wortman).

250 —— On a small collection of vertebrate fossils from the Loup Fork beds of northwestern Nebraska; with note on the geology of the region.

Am. Nat., vol. xxviii, pp. 236-248, pls. i-ii.

Describes two new species from the Miocene of Nebraska and the lithologic character and structure of the Loup Fork beds in which they are found.

251 **Haworth** (Erasmus). Relative value of limestone, sandstone, and shale for stratigraphic work in Kansas.

Kans. Univ. Quart., vol. ii, pp. 102-104.

States that in Kansas the limestones are more important for stratigraphic purposes than either sandstone or shale, on account of their regularity and persistency in lateral extent.

252 —— A geologic section along the Atchison, Topeka and Santa Fe Railroad, from Cherryvale to Lawrence and from Ottawa to Holliday [Kansas].

Kans. Univ. Quart., vol. ii, pp. 118-126.

Describes the strata along the line of this section and correlates certain beds with those of other sections previously described.

253 —— Résumé of stratigraphy of eastern Kansas.

Kans. Univ. Quart., vol. ii, pp. 126-129.

Gives a general sketch of the succession of the formations in eastern Kansas as shown by the several sections previously described.

254 —— The topography of eastern Kansas.

Kans. Univ. Quart., vol. ii, pp. 129-136.

Describes the general topographic features of eastern Kansas.

255 —— The surface gravels of eastern Kansas.

Kans. Univ. Quart., vol. ii, pp. 136-142.

Describes the distribution of the gravels, and considers that they are residual products derived from the weathering of the underlying formations.

256 —— and **Kirk** (M. Z.). A geologic section along the Neosho River from the Mississippian formation of the Indian Territory to White City, Kans., and along the Cottonwood River from Wyckoff to Peabody.

Kans. Univ. Quart., vol. ii, pp. 104-115.

Describes the limestones, sandstones, and shales outcropping along the Neosho and Cottonwood rivers.

257 —— and **Piatt** (W. H. H.). A geologic section along the Verdigris River from the State line to Madison [Kans.]

Kans. Univ. Quart., vol. ii, pp. 115-118.

Describes the stratigraphy along the Verdigris River.

258 **Hayes** (C. Willard). Geology of a portion of the Coosa Valley, in Georgia and Alabama.

Geol. Soc. Am., Bull., vol. v, pp. 465-480, pl. 18.

Abstract: Am. Geol., vol. xiii, p. 142 (8 l.).

Describes the physical features of the region and the succession of the Cambrian, Silurian, and Devonian rocks. Discusses the structure and gives a sketch of its Paleozoic and post-Paleozoic history.

259 —— On the Devonian (Oriskany) in the southern Appalachians.

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 237-238 (communicated).

Mentions fossils of Devonian facies found in a ferruginous sandstone in Alabama which rests on Trenton or Hudson River strata. Considers the unconformity between the beds to be due to overlap of deposition and not to faulting.

260 **Hayes** (C. Willard). Ringgold folio. Georgia, Tennessee.

U. S. Geol. Surv., Geologic Atlas of the United States, folio 2.

Describes the geography and the occurrence and character of the Cambrian, Silurian, Devonian, and Carboniferous strata and the mineral resources, including coal, iron, and the soils, of the region. Includes topographic, colored areal geologic, economic geologic, and structure section maps and a sheet of columnar sections.

261 —— Kingston folio. Tennessee.

U. S. Geol. Surv., Geologic Atlas of the United States, folio 4.

Describes the geography and drainage, the occurrence and lithologic character of the Cambrian, Silurian, Devonian, and Carboniferous strata, the geologic structure and the occurrence of coal, iron ores, and soils of the region. Includes topographic, colored areal geologic, economic geologic, and structure section maps and a sheet of columnar sections.

262 —— Chattanooga folio. Tennessee.

U. S. Geol. Surv., Geologic Atlas of the United States, folio 6.

Describes the physiography, the occurrence and distribution of the Cambrian, Silurian, Devonian, and Carboniferous strata, the geologic structure, and the coal and iron deposits and soils of the region. Includes topographic, colored areal geologic, economic geologic, and structure section maps and a sheet of columnar sections.

263 —— Sewanee folio. Tennessee.

U. S. Geol. Surv., Geologic Atlas of the United States, folio 8.

Describes the physiography and drainage of the region, the occurrence and distribution of the Silurian, Devonian, and Carboniferous strata, the geologic structure and the mineral resources, including coal and iron. Contains topographic, colored areal geologic, economic geologic, and structure section maps and a sheet of columnar sections.

264 —— and **Campbell** (M. R.). Geomorphology of the southern Appalachians.

Nat. Geog. Mag., vol. vi, pp. 63–126, pls. 4–6.

Reviews the previous work in the region. Describes the several types of the deformed Cretaceous peneplain, the deformation of the Cretaceous and Tertiary peneplains, and the drainage development as affected by dynamic movements. Includes a discussion of the sedimentary record.

265 **Herrick** (C. L.). Observations upon the so-called Waverly group of Ohio.

Ohio Geol. Surv., vol. vii, pp. 495–515.

Describes the character and distribution of the Waverly strata and gives list of fossils from different localities.

266 **Hershey** (Oscar H.). The Elk Horn Creek area of St. Peter sandstone, in northwestern Illinois.

Am. Geol., vol. xiv, pp. 169–179, with map.

Describes the lithologic character of the Lower Magnesian limestone, the St. Peter sandstone, and the Trenton limestone in the area and the deformation they have undergone. Gives a general summary of the geologic features of the region.

266*a* **Hershey** (Oscar H.). The Pleistocene rock gorges of northwestern Illinois.

Abstract: Jour. of Geol., vol. ii, pp. 240–241.

Noticed in Bibliography and Index for 1892 and 1893.

267 **Hilgard** (E. W.). [Correlation of clastic rocks.]

Int. Cong. Geol., Compte Rendu, 5th session, p. 167 (7 l).

Remarks on the consideration of the abundance and scarcity of species in the correlation of strata.

268 **Hill** (B. H.). Notes on Uintacrinus socialis Grinnell.

Kans. Univ. Quart., vol. ii, pp. 20–21.

Gives a diagram and brief description of the crinoid.

269 **Hill** (E. J.). An early observation on the history of the Great Lakes.

Am. Geol., vol. xiv, p. 405 (½ p.) (correspondence).

Gives an extract from a report of Alexander Henry in 1761, published in 1809.

270 **Hill** (Robert T.). Notes on the Tertiary and later history of the Island of Cuba.

Am. Jour. Sci., 3d ser., vol. xlviii, pp. 196–212.

Describes the metamorphic and igneous rocks, the pre-Tertiary sedimentaries, the Tertiary limestones, the post-Tertiary folding, the terraces and elevated coral reefs, and the cienagas. Discusses the different phases of the geologic history of the island as indicated by its topography.

271 —— Geology of parts of Texas, Indian Territory, and Arkansas adjacent to Red River.

Geol. Soc. Am., Bull., vol. v, pp. 297–338, pls. 12–13.

Abstracts: Am. Jour. Sci., 3d ser., vol. xlvii, p. 141 (½ p.); Am. Geol., vol. xiii, pp. 208–209 (½ p.).

Describes the physiography of the region. Gives a list of the Cretaceous, Tertiary, and Pleistocene formations and their subdivisions, whose outcrops at different localities are described. Gives lists of fossils found at certain horizons, discusses the oscillations of land and sea, and includes the author's conclusions as to the Cretaceous section of the region. Plate 12 contains a geologic map and cross sections.

272 **Hillebrand** (W. F.). [Beaver Creek meteorite.]

Am. Jour. Sci., 3d. ser., vol. xlvii, pp. 431–435.

Discusses the chemical composition of this meteorite.

273 **Hind** (Wheelton). [On the occurrence of the genus Naiadites in the coal formation of Nova Scotia.]

Geol. Soc. London, Quart. Jour., vol. l, pp. 437–442.

Gives a list of synonyms of Naiadites and describes the character of the genus.

274 **Hinde** (George Jennings). Note on the radiolarian chert from Angel Island and from Buri-Buri Ridge, San Mateo County, Cal.

Univ. of Cal., Dept. of Geol., Bull., vol. i, pp. 235–240.

Describes the occurrence of Radiolaria in cherts and the details of those forms which can be partially identified.

275 **Hinde** (George Jennings). [Origin of the novaculites of Arkansas.]
Geol. Soc. London, Quart. Jour., vol. l, pp. 391-392.
In discussion of paper by F. Rutley on the "Origin of certain novaculites and quartzites."

276 **Hitchcock** (C. H.). Glaciation of the White Mountains, New Hampshire.
Geol. Soc. Am., Bull., vol. v, pp. 35-37.
Discusses the evidences which indicate that glaciation has extended over the highest of the White Mountains.

276*a* —— Ancient eruptive rocks in the White Mountains.
Abstract: Am. Geol., vol. xiii, p. 213 (¼ p.).

277 **Hobbs** (William H.). Volcanite, an anorthoclase-augite rock chemically like the dacite.
Abstracts: Geol. Soc. Am., Bull., vol. v, pp. 598-602; Am. Geol., vol. xiii, p. 214 (7 l.).
Describes the petrographic character and chemical composition of a volcanic rock from the Lipari Islands.

278 —— On a recent diamond find in Wisconsin and of the probable origin of this and other Wisconsin diamonds.
Am. Geol., vol. xiv, pp. 31-35, with map.
Describes the location and occurrence of the diamonds that have been found in Wisconsin.

279 —— Differential faults.
Am. Geol., vol. xiv, pp. 35-37.
Describes a strike fault occurring in the Green Mountains of Massachusetts and Connecticut.

279*a* —— Geological structure of the Hoosatonic Valley, lying east of Mount Washington, Massachusetts.
Abstract: Am. Geol., vol. xiii, p. 142 (½ p.).
Noticed in Bibliography and Index for 1892 and 1893.

279*b* —— The geologic structure of the Mount Washington mass of the Taconic range.
Abstract: Am. Nat., vol. xxviii, pp. 158-160.
Noticed in Bibliography and Index for 1892 and 1893.

280 **Hollick** (Arthur). Additions to the paleobotany of the Cretaceous formation of Long Island [New York].
Torrey Bot. Club, Bull., vol. xxi, pp. 49-65, pls. 174-180.
Abstract: Am. Jour. Sci., 3d ser., vol. xlvii, p. 402.
Describes eight new species from this horizon.

281 —— Fossil salvinias, including description of a new species.
Torrey Bot. Club, Bull., vol. xxi, pp. 253-257, pl. 205.
Refers to the literature of this genus and describes Salvinia elliptica Newb. from the Upper Cretaceous of Washington.

282 —— A new fossil nelumbo from the Laramie group at Florence, Colo.
Torrey Bot. Club, Bull., vol. xxi, pp. 307-310.
Describes and figures a leaf of Nelumbo laramiensis n. sp.

283 **Hollick** (Arthur). Observations on the geology and botany of Marthas Vineyard [Mass.].

N. Y. Acad. Sci., vol. xiii, pp. 8–22.

Abstract: Am. Nat., vol. xxviii, pp. 265–266 (½ p.).

Reviews the previous descriptions of the geology of Marthas Vineyard.

284 —— [On previous descriptions of Spiraxis major and Spiraxis randalli from the Chemung sandstones.]

N. Y. Acad. Sci., Trans., vol. xiii, pp. 118–119.

Refers to descriptions of these species by Dr. Newberry and compares them with Cladoselache newberryi.

285 —— Some further notes on the geology of the north shore of Long Island [NewYork].

N. Y. Acad. Sci., Trans., vol. xiii, pp. 122–130.

Abstract: Am. Jour. Sci., 3d ser., vol. xlvii, p. 402.

Discusses the evidences which indicate the presence of Cretaceous strata and the distribution of the glacial deposits in this region.

285*a* —— Recent investigations in the Cretaceous formation on Long Island, New York.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xlii, p. 175 (½ p.).

286 —— Notes on the northward extension of the Yellow Gravel in New Jersey, Staten Island, Long Island, and eastward.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xlii, pp. 175–176.

Brief note on the distribution of the Yellow Gravel.

287 **Holmes** (J. A.) Geology of the sand-hill country of the Carolinas.

Abstract: Geol. Soc. Am., Bull., vol. v, pp. 33–34.

Describes the section between the Neuse and Savannah rivers and the general features of the Cretaceous and Tertiary deposits.

288 **Holst** (Nils Olaf). [Classification of Pleistocene deposits.]

Int. Cong. Geol., Compte Rendu, 5th session, pp. 197–198.

Remarks on the unity of the Glacial period.

289 **Hopkins** (T. C.). Springs: the influence of stratigraphy on their emergence, as illustrated in the Ozark uplift.

Am. Geol., vol. xiv, pp. 365-368, with map.

Gives a general section of Paleozoic strata of northern Arkansas and describes the characters of the beds and the distribution of the springs.

289*a* —— Marbles and other limestones.

Reviews: Jour. of Geol., vol. ii, pp. 339–341, by R. A. F. Penrose, jr.; Am. Nat., vol. xxviii, p. 337 (½ p.).

Noticed in Bibliography and Index for 1892 and 1893.

289*b* —— **Simonds** (F. W.) and. The geology of Benton County, Ark.

Ark. Geol. Surv., Ann. Rept., 1891, vol. ii, pp. 1–75.

See Simonds (F. W.) and Hopkins (T. C.), No. 511.

290 **Hovey** (E. O.). Microscopic structure of siliceous oolite.

Geol. Soc. Am., Bull., vol. v, pp. 627–629, pl. 21.

Abstract: Am. Geol., vol. xiii, pp. 223–224 (½ p.).

Describes the microscopic structure of siliceous oolite from Pennsylvania and New Jersey.

291 **Hovey** (E. O.). A study of the cherts of Missouri.

Am. Jour. Sci., 3d ser., vol. xlviii, pp. 401–409.

Abstracts: Jour. of Geol., vol. ii, p. 756 (¼ p.); Am. Geol., vol. xiv, p. 196 (¼ p.).

Describes the petrographic and chemical characteristics of the cherts and discusses their origin.

292 —— Note on the petrography of certain basaltic bowlders from Thetford, Vt.

N. Y. Acad. Sci., Trans., vol. xiii, pp. 161–164.

Gives a chemical analysis of the material and describes the petrographic characters.

292*a* **Howe** (W. T. H.), **Penfield** (S. L.) and. On the chemical composition of chondrodite, humite, and clinohumite.

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 188–206.

See Penfield (S. L.) and Howe (W. T. H.), No. 417.

293 **Howell** (Edwin E.). Beaver Creek meteorite.

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 430–435.

Describes the locality and finding of this meteorite and includes a discussion of its chemical composition by W. F. Hillebrand and of its microscopic characters by G. P. Merrill.

294 **Howorth** (Henry). [Mammoth remains of Canada and Alaska.]

Geol. Soc. London, Quart. Jour., vol. l, pp. 8–9.

In discussion of paper by G. M. Dawson on "Notes on the occurrence of mammoth remains in the Yukon district of Canada and Alaska."

295 **Hubbard** (Lucius L.). Macroscopic minerals of Michigan.

Michigan, Rept. of the State Board of Geol. Surv. for 1891 and 1892, pp. 174–176.

Gives a list of macroscopic minerals found in Michigan.

296 **Hughes** (T. McKenny). [Correlation of clastic rocks.]

Int. Cong. Geol., Compte Rendu, 5th session, p. 59 (¼ p.).

Remarks on the complexity of the data to be considered in the correlation of rocks.

297 —— [Classification of Pleistocene deposits.]

Int. Cong. Geol., Compte Rendu, 5th session, pp. 194–195.

Remarks on the possibility of chronologic and genetic classifications.

298 —— Note on Walnut Canyon and its cliff dwellings.

Int. Cong. Geol., Compte Rendu, 5th session, pp. 475–476.

Describes the Carboniferous section exposed in this canyon.

299 **Hull** (Edward). [Mammoth remains of Canada and Alaska.]

Geol. Soc. London, Quart. Jour., vol. l, p. 9 (¼ p.).

In discussion of paper by G. M. Dawson, "Notes on the occurrence of mammoth remains in the Yukon district of Canada and Alaska."

300 —— [Origin of the novaculites of Arkansas.]

Geol. Soc. London, Quart. Jour., vol. l, p. 392 (½ p.).

In discussion of paper by F. Rutley on the "Origin of certain novaculites and quartzites."

301 **Huntington** (Oliver Whipple). Further observations upon the occurrence of diamonds in meteorites.

Am. Acad. Arts Sci., Proc., vol. xxix, pp. 204–211.

Abstract: Am. Geol., vol. xiii, pp. 284–285 (½ p.).

Gives an account of the experiments employed in determining the presence of diamonds in the Canyon Diablo meteorite.

302 —— The Smithville meteoric iron.

Am. Acad. Arts Sci., Proc., vol. xxix, pp. 251–260, figs. 1–2.

Gives a chemical analysis of the material and an account of the finding of other meteoric iron masses in this portion of Tennessee, and the evidences indicating that they possess common characteristics and may have formed originally a part of the same mass.

302*a* —— **Kunz** (George F.) and. The diamond in the Canyon Diablo meteoric iron.

Abstract: Eng. and Mg. Jour., vol. lvii, p. 394.

Noticed in Bibliography and Index for 1892 and 1893.

303 **Hurlburt** (E. B.). On alunite from Red Mountain, Ouray County, Colo.

Am. Jour. Sci., 3d ser., vol. xlviii, pp. 130–131.

Describes the chemical and crystallographic characters of alunite from Colorado.

304 **Hyatt** (Alpheus). Trias and Jura in the Western States.

Geol. Soc. Am., Bull., vol. v, pp. 395–434.

Abstracts: Am. Jour. Sci., 3d ser., vol. xlvii, pp. 142–143; Am. Geol., vol. xiii, p. 148 (⅜ p.).

Discusses the age and faunal relations of the American and Sailors canyons deposits, California, and describes the fauna of the Upper Jura of California. Discusses the relative age of the rocks and describes the characters of fossils from different localities.

305 —— Phylogeny of an acquired characteristic.

Am. Phil. Soc., Proc., vol. xxxii, pp. 349–640, pls. 1–14.

Describes the evidences which show that the tendency of shells toward becoming arcuate and coiled is general in the descendants of straight shells and not confined to any special series or time. Describes genera and species of Nautiloidea.

I.

305*a* **Iddings** (Joseph P.). The eruptive rocks of Electric Peak and Sepulchre Mountain, Yellowstone National Park.

Abstract: Am. Geol., vol. xiv, pp. 117–118.

Noticed in Bibliography and Index for 1892 and 1893.

305*b* —— Genetic relationships among igneous rocks.

Abstracts: Am. Nat., vol. xxviii, p. 515 (½ p.); Am. Geol., vol. xiii, p. 195 (10 l).

Noticed in Bibliography and Index for 1892 and 1893.

305*c* —— A dissected volcano.

Abstract: Am. Nat., vol. xxviii, p. 603 (⅛ p.).

Noticed in Bibliography and Index for 1892 and 1893.

306 **Iddings** (Joseph P.). Petrographical character of the lavas.

U. S. Geol. Surv., 14th Ann. Rept., pt. 2, pp. 520–524.

Describes the petrographic character of the basaltic rocks collected by C. D. Walcott in the Grand Canyon of the Colorado.

307 —— and **Weed** (Walter H.). Livingston Folio. Montana.

U. S. Geol. Surv., Geologic Atlas of the United States, folio 1.

Abstract: Am. Jour. Sci., 3d ser., vol. xlviii, pp. 170-172.

Describes the geography and topography, the geologic relations of the mountain ranges, the character and occurrence of the Algonkian, Cambrian, Devonian, Carboniferous, Juratrias, Cretaceous, Tertiary, and Pleistocene strata and of the igneous rocks, and the occurrence of gold and coal. Includes topographic, colored areal geologic, economic geologic, and structure section maps, and a sheet of columnar sections.

307*a* —— Yellowstone Valley from Livingston to Cinnabar.

Int. Cong. Geol., Compte Rendu, 5th Session, pp. 326–335.

See Weed (W. H.) and Iddings (J. P.), No. 615.

307*b* **Indiana, Department of Geology and Natural Resources.** Eighteenth Annual Report, 1893.

Abstract: Am. Geol., vol. xiv, pp. 125–126.

308 **Ingall** (Elfric Drew). Preliminary note on the limestones of the Laurentian system.

Can. Rec. Sci., vol. vi, pp. 88–91.

Describes the inclusions of gneisses and similar rocks in these limestones, and considers that they represent areas of gneiss altered into limestone in place and that their location has been determined by the bends and contortions of these rocks.

309 **Ingersoll** (Charles A.). On hemimorphic wulfenite crystals from New Mexico.

Am. Jour. Sci., 3d ser., vol. xlviii, pp. 193–195.

Describes the crystallographic characters of the crystals.

310 **Ingram** (Henry B.). The great bluestone industry.

Pop. Sci. Monthly, vol. xlv, pp. 352–359.

Abstract: Jour. of Geol., vol. ii, p. 647 (½ p.).

Describes the occurrence and character of flagstones in New York of Devonian age.

J.

311 **James** (Joseph F.). On the value of supposed algæ as geological guides.

Am. Geol., vol. xiii, pp. 95–101.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xlii, pp. 172–173 (½ p.).

Quotes from different authors as to the geologic occurrence and range of algæ and their value as evidence in determining geologic horizons.

312 **James** (Joseph F.). Manual of the paleontology of the Cincinnati group.

Cin. Soc. Nat. Hist., Jour., vol. xvi, pp. 178–208.

Continues the description of fossils found in the Cincinnati group, from vol. xv, p. 159.

313 —— The St. Peters sandstone.

Cin. Soc. Nat. Hist., Jour., vol. xvii, pp. 115–135.

Gives a historical sketch of the earlier description of the St. Peters sandstone. Describes its distribution and lithologic character and mentions some of the fossils found in it.

313*a* —— Remarks on the genus Arthrophycus Hall.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xlii, p. 172 (⅓ p.).

313*b* —— Studies in problematic organisms: the genus Fucoides.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xlii, p. 173 (9 l.).

314 **Jardin** (Ed.). Formation du tuf calcaire ou travertin et des dépots siliceux par la végetation des sources d'eau chaude.

Soc. Acad. de Brest, 2d ser., vol. xix, pp. 33–75.

Reviews the paper by W. H. Weed on the travertine deposits of the Yellowstone National Park and mentions the occurrence of deposits by hot spring waters in Virginia, Arkansas, and California.

315 **Jenney** (Walter P.). The lead and zinc deposits of the Mississippi Valley.

Am. Inst. Mg. Engrs., Trans., vol. xxii, pp. 171–225 and 642–646.

Describes the topography of the lead and zinc mining regions of the Mississippi Valley, the secular upheavals and depressions, their influence on the formation of the ore deposits and the geologic occurrence of the ore bodies in Missouri and Wisconsin, and discusses the theories as to their manner of formation and deposition.

316 **Jennings** (E. P.). The Mesabi iron range.

Science, vol. xxiii, p. 73.

Describes the character and structure of the ore bodies in this region.

317 **Joggar** (T. A., jr.). Some conditions of ripple marks.

Am. Geol., vol. xiii, pp. 199–201 (correspondence).

Reviews paper by J. E. Spurr on "False bedding in stratified drift deposits."

318 **Jones** (Arthur J.). Coal Measures of Powsheik County [Iowa].

Iowa Acad. Sci., Proc., vol. i, pt. iv, pp. 59–60.

Brief note on the occurrence of Coal Measures in this county.

319 —— Cardiocarpus in Iowa.

Iowa Acad. Sci., Proc., vol. i, pt. iv, p. 61.

Note on the occurrence of seeds of this genus found in a seam of bituminous coal.

320 **Jordan** (E. T. J.). Natural gas.

Ind. Dept. Geol. and Nat. Res., 18th Rept., pp. 198–218.

Discusses the evidences as to the loss of pressure in the gas wells of Indiana and the origin of natural gas.

K.

321 **Keith** (Arthur). Harpers Ferry folio. Maryland, Virginia, and West Virginia.

U. S. Geol. Surv., Geologic Atlas of the United States, folio 10.

Describes the geography and drainage of the region, the occurrence of quartz-porphyry, andesite, Catoctin schist, and diabase, the occurrence and distribution of the Cambrian, Juratrias, and Tertiary strata, the geologic structure and the deposits of iron, copper, and building stones. Includes topographic, colored areal geologic, economic geologic, and structure section maps.

322 —— Geology of the Catoctin belt.

U. S. Geol. Surv., 14th Ann. Rept., pt. 2, pp. 285–395, pls. xix–xxxix, fig. 43.

Describes the physical features and reviews the literature of this region—the eastern mountain belt of Maryland and Virginia. Describes the occurrence and composition of the granite, quartz-porphyry, andesite, and Catoctin schist, and discusses the relations of these igneous and volcanic rocks. Describes the occurrence and lithologic composition of the sedimentary beds of Cambrian, Silurian, and Juratrias age. Discusses the geologic structure and the geomorphology of the region.

323 **Kemp** (James Furman). Preliminary report on the geology of Essex County [N. Y.].

N. Y. State Mus., 47th Ann. Rept., pp. 627–666.

Gives a list of 38 papers on the geology and mineralogy of the Adirondacks. Discusses the general geologic relations and reviews the schemes of classification of rocks of this region previously published. Describes the geology of the different townships of the county, illustrated by maps showing the distribution of the crystalline and sedimentary formations.

324 —— [Relation of deformation to ore deposition.]

Geol. Soc. Am., Bull., vol. v, p. 32 (½ p.).

In discussion of paper by W. P. Blake on the "Wisconsin lead and zinc deposits."

325 —— Gabbros on the western shore of Lake Champlain [N. Y.].

Geol. Soc. Am., Bull., vol. v, pp. 213–224.

Abstracts: Am. Geol., vol. xiii, pp. 214–215 (½ p.); Am. Nat., vol. xxviii, pp. 947–948.

Reviews the previous descriptions of the geology of the Adirondacks; describes the distribution of the gabbros, the composition of the anorthosytes, the occurrence and petrographic character of the basic gabbros, the titaniferous magnetite ore bodies and the contacts of gabbro and limestone.

326 —— The ore deposits at Franklin Furnace and Ogdensburg, N. J.

N. Y. Acad. Sci., Trans., vol. xiii, pp. 76–96.

Abstract: Am. Geol., vol. xiv, p. 202 (½ p.).

Describes the minerals and ore bodies of these localities; describes the general geologic relations, the character, and the structure of the ore bodies and discusses the origin of the ore. Gives a list of all minerals and a list of 32 papers on minerals and ores found at these localities.

327 **Kemp** (James Furman). An orbicular granite from Quonochontogue Beach, Rhode Island.

N. Y. Acad. Sci., Trans., vol. xiii, pp. 140-144, pl. ii.

Abstract: Am. Geol., vol. xiv, p. 53 (⅓ p.).

Describes the occurrence of granite bowlders and their petrographic character.

328 —— Additional note on leucite, in Sussex County, N. J.

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 339–340.

Abstract: Am. Nat., vol. xxviii, p. 873 (6 l.).

Describes the occurrence of leucite in a dike rock of this locality.

328*a* —— and **Hollick** (A.). The granite at Mounts Adam and Eve, Warwick, Orange County, N. Y.

Abstract: Am. Geol., vol. xiii, p. 427 (¼ p.).

Noticed in Bibliography and Index for 1892 and 1893.

328*b* —— and **Marsters** (V. F.). The trap dikes of the Lake Champlain region.

Abstract: Am. Geol., vol. xiii, pp. 426–427 (⅜ p.).

Noticed in Bibliography and Index for 1892 and 1893.

329 **Kennedy** (W.) Geology of Jefferson County, Tex.

Am. Geol., vol. xiii, pp. 268-275.

Gives the section displayed by a well boring to a depth of 400 feet. The greater portion of the county is considered to be of very recent origin.

330 —— The age of the iron ores of east Texas.

Science, vol. xxiii, pp. 22-25.

Reviews the work previously done in this region. Describes the character of the ore bodies and discusses the evidence bearing on their geologic age.

331 **Keyes** (Charles Rollin). Crustal adjustment in the Upper Mississippi Valley.

Geol. Soc. Am., Bull., vol. v, pp. 231-242.

Abstract: Am. Geol., vol. xiii, pp. 210-211 (⅓ p.).

Describes the structure and character of the deformations of the Carboniferous basin of the Mississippi Valley and the character of the folds and faults of the region. Includes the author's summary of conclusions.

332 —— The nature of coal horizons.

Jour. of Geol., vol. ii, pp. 178-186.

Describes the character of a coal horizon at time of formation, the stratigraphy of coal beds, and a coal horizon as it now exists.

333 —— Origin of anthracite.

Am. Geol., vol. xiii, p. 411–415.

Reviews a paper by J. J. Stevenson on the origin of anthracite and describes some of the physical changes which vegetable material undergoes in the formation of coal.

333*a* **Keyes** (Charles Rollin). Coal deposits of Iowa.

Iowa Geol. Surv., vol. ii, p. 536, pls. i-xviii, figs. 1-222.

Discusses the origin of coal. Describes the geologic features of the Carboniferous basin of the Mississippi Valley, the geology of the coal area, the lithologic and stratigraphic characteristics of the Coal Measures, and the local features of the coal beds of the various counties of the State.

334 —— Cretaceous formations of northwestern Iowa.

Abstract: Iowa Acad. Sci., Proc., vol. i, pt. iv, pp. 24-25.

Mentions the subdivisions of the Cretaceous found in this part of Iowa.

335 —— Derivation of the Unione fauna of the Northwest.

Iowa Acad. Sci., Proc., vol. i, pt. iv, pp. 25-29.

Describes the geographic and geologic distribution of Unionidæ in North America.

336 —— Process of formation of certain quartzites.

Abstract: Iowa Acad. Sci., Proc., vol. i, pt. iv, pp. 29-31.

Describes the formation of the Sioux quartzite of Iowa.

336*a* —— The Coal Measures of Iowa.

Abstracts: Eng. and Mg. Jour., vol. lvii, pp. 269-270, 295-297, and 317-318; Am. Geol., vol. xiii, pp. 353-354.

Noticed in Bibliography and Index for 1892 and 1893.

336*b* —— Some Maryland granites and their origin.

Review: Am. Geol., vol. xiii, p. 63 (½ p.).

Noticed in Bibliography and Index for 1892 and 1893.

336*c* —— Epidote as a primary constituent of eruptive rocks.

Review: Am. Geol., vol. xiii, p. 63 (¼ p.).

Noticed in Biliography and Index for 1892 and 1893.

336*d* **Kindle** (E. M.), **Marsters** (V. F.) and. Geologic literature of Indiana (stratigraphic and economic).

Ind. Acad. Sci., Proc., 1893, pp. 156-191.

See Marsters (V. F.) and Kindle (E. M.), No. 402.

336*e* **King** (Clarence). The age of the earth.

Smith. Inst., Ann. Rept., 1892-93, pp. 335-352.

Noticed in Bibliography and Index for 1892 and 1893.

337 **King** (Francis P.). A preliminary report on the corundum deposits of Georgia.

Ga. Geol. Surv., Bull. No. 2, pp. 133, with geologic map of north Georgia.

Gives a historical sketch of corundum and a description of its physical features, alterations, and associate minerals. Describes its geographic and geologic distribution in Georgia, and gives a list of 33 American papers on corundum.

338 —— Natural and artificial abrasives.

Ga. Geol. Surv., Bull. No. 2, pp. 119-133.

Describes the character and occurrence of pumice, infusorial earth, tripoli, buhrstone, grindstones, oilstones, and whetstones.

339 **Kingsley** (J. S.). The classification of the Arthropoda.

Am. Nat., vol. xxviii, pp. 118–135 and 220–235.

Reviews the previous classifications of Arthropoda, presents the author's scheme of classification, with a description of the characters of different groups, and includes a bibliography of the literature cited, consisting of 81 papers.

339*a* **Kirk** (M. Z.), **Haworth** (E.) and. A geologic section along the Neosho River from the Mississippian formation of the Indian Territory to White City, Kans., and along the Cottonwood River from Wyckoff to Peabody.

Kans. Univ. Quart., vol. ii, pp. 104–115.

See Haworth (E.) and Kirk (M. Z.), No. 256.

340 **Knowlton** (F. H.). Fossil flora of Alaska.

Geol. Soc. Am., Bull., vol. v, pp. 573–590.

Abstracts: Am. Jour. Sci., 3d ser., vol. xlvii, p. 137 (⅓ p.); Am. Geol., vol. xiii, p. 137 (4 l.).

Gives a historical review of the literature of the subject and a list of fossil plants heretofore collected in Alaska, and discusses the geologic age of the beds as shown by the fossil flora.

341 —— Fossil wood from the Black Hills, South Dakota.

Jour. of Geol., vol. ii, pp. 260–261.

Describes the structure of the wood of genus Araucarioxylon.

342 —— Fossil plants as an aid to geology.

Jour. of Geol., vol. ii, pp. 365–382.

Abstract: Am. Geol., vol. xiv, p. 335 (¼ p.).

Discusses some of the principles of paleobotany, the use of fossil plants in restricted areas, the study of fossil plants by means of internal structure, and the subsidiary use of fossil plants.

343 —— Note on a few fossil plants from the Fort Union group of Montana, with a description of one new species.

U. S. Nat. Mus., Proc., vol. xvi, pp. 33–36, pls. i–ii.

Describes and figures Populus meedsii n. sp. and Pterospermites cupanioides Newby. sp.

344 —— A new fossil hepatic from the Lower Yellowstone in Montana.

Torrey Bot. Club., Bull., vol. xxi, pp. 458–460, pl. 219.

Describes and figures Precissites wardii n. gen. et sp.

344*a* **Kreider** (D. A.), **Penfield** (S. L.) and. Mineralogical notes.

Am. Jour. Sci., 3d ser., vol. xlviii, pp. 141–144.

See Penfield (S. L.) and Kreider (D. A.), No. 448.

334*b* **Kummel** (H. B.), **Salisbury** (R. D.) and. Surface geology. Lake Passaic, an extinct glacial lake.

N. J. Geol. Surv., Rept. for 1893, pp. 225–328.

See Salisbury (R. D.) and Kummel (H. B.), No. 492.

345 **Kunz** (George F.). Topaz from Texas.

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 403–404 (communicated).

Gives the crystallographic measurements of topaz, and remarks on the characters of a diamond from Wisconsin.

346 **Kunz** (George F.). A new locality of true emeralds.
Am. Jour. Sci., 3d ser., vol. xlviii, pp. 429–430.
Describes the occurrence and physical character of emeralds found in North Carolina.

347 —— Mineralogical notes.
N. Y. Acad. Sci., Trans., vol. xiii, pp. 144–145.
Notes on topaz from Texas and diamonds from Wisconsin.

347*a* —— and **Huntington** (O. W.). The diamond in the Canyon Diablo meteoric iron.
Abstract: Eng. and Mg. Jour., vol. lvii, p. 394.
Noticed in Bibliography and Index for 1892 and 1893.

L.

348 **Lakes** (Arthur). Colorado's new gold camps.
Eng. Mag., vol. vii, pp. 623–638.
Describes the occurrence of gold ores at Cripple Creek, the silver ores of Creede, and the newly discovered gold belt at Leadville.

349 **Lane** (Alfred C.). Geologic activity of the earth's originally absorbed gases.
Geol. Soc. Am., Bull., vol. v, pp. 259–280.
Abstract: Am. Geol., vol. xiii, pp. 138–139.
Describes the nature of the absorbed gases and their importance in the crystallization of plutonic rocks. Discusses the possibility of deep-seated cracking, igneous phenomena and their causes, and the characteristics of contact and magmatic zones.

350 —— Microscopic characters of rocks and minerals of Michigan.
Michigan, Rept. of State Board of Geol. Surv. for 1891–92, pp. 176–183.
Describes the occurrence of quartz-diabase, amphibolite and hornblende schists and lamprophyres.

351 —— What is Archean?
Science, vol. xxiii, p. 128.
Discusses the use of the terms Azoic and Archean.

352 **Lawson** (Andrew C.). The geology of Carmelo Bay.
Univ. of Cal., Dept. of Geol., Bull., vol. i, pp. 1–59, pls. 1–4.
Abstract: Am. Nat., vol. xxviii, pp. 57–58.
Describes the general physiography and geology of the region, the petrographic characters of the Santa Lucia granite of the Carmelo and Monterey series and of the eruptive rocks. Discusses the evidences of the ancient baselevels of the Pacific Coast. In this work Professor Lawson was assisted by Mr. Juan de la C. Posada.

353 —— The Post-Pliocene diastrophism of the coast of southern California.
Univ. of Cal., Dept. of Geol., Bull., vol. i, pp. 115–160, pls. 8–9.
Reviews: Jour. of Geol., vol. ii, pp. 235–238, by R. D. Salisbury; Am. Geol., vol. xiv, pp. 335–338; Am. Nat., vol. xxviii, pp. 340–341 (½ p.).
Discusses the evidences which indicate an uplift of 800 to 1,500 feet along the coast of southern California during post-Pliocene time, and of a differential movement of the crust in the same region.

354 **Lawson** (Andrew C.). The geomorphology of the coast of northern California.

Univ. of Cal., Dept. of Geol., Bull., vol. i, pp, 241-272.

Discusses the evidences of a general uplift along the northern California coast line in Pliocene time and of the more recent subsidence of the Golden Gate.

355 —— A multiple diabase dike.

Am. Geol., vol. xiii, pp. 293-297, pl. vii.

Describes a diabase dike occurring on an island near the northeast coast of Lake Superior, in which the dike is split up into 28 vertically intrusive sheets in a breadth of 14 feet. These sheets represent but one invasion of the magma, and the granite which they penetrate is apparently homogeneous.

356 —— Note on the Chehalis sandstone.

Am. Geol., vol. xiii, pp. 436-437 (correspondence).

Describes the occurrence of this sandstone in Washington, mentions the fossils found in it, which indicate that it belongs to the Eocene or Miocene, and discusses its bearing in determining the age of the Puget group.

357 **Leonhard** (A. G.). Occurrence of zinc in northeastern Iowa.

Iowa Acad. Sci., Proc., vol. i, pt. iv, pp. 48-52.

Describes the character and occurrence of the ore and discusses the manner of its deposition.

358 —— Satin spar from Dubuque [Iowa].

Iowa Acad. Sci., Proc., vol. i, pt. iv, pp. 52-55.

Describes the occurrence of calcite in a cave near Dubuque, Iowa.

359 **Leverett** (Frank). [Origin of the "fringe."]

Geol. Soc. Am., Bull., vol. v, p. 17 (7 l.).

In discussion of remarks by W. Upham on the "Origin of the fringe on Long Island."

360 —— [Character of material deposited during the retreat of the ice sheet.]

Geol. Soc. Am., Bull., vol. v, p. 84 (¼ p.).

In discussion of paper by Warren Upham on "Evidences of the derivation of the kames, eskers, and moraines of the North American ice sheet, chiefly from its englacial drift."

360*a* —— Changes of drainage in the Rock River Basin, in Illinois.

Abstracts: Am. Assoc. Adv. Sci., Proc., vol. xlii, p. 179 (⅓ p.); Am. Geol., vol. xii, p. 179 (⅓ p.).

360*b* —— Evidences of the diversity of the older drift in northwestern Illinois.

Abstract: Am. Geol., vol. xii, p. 229 (½ p.).

360*c* —— **Chamberlin** (T. C.) and. Further studies of the drainage features of the Upper Ohio Basin.

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 247-283.

See Chamberlin (T. C.) and Leverett (Frank), No. 63.

360*d* **Lewis** (Henry Carvill). Papers and notes on the Glacial geology of Great Britain and Ireland. Edited by Henry W. Crosskey.

London: Longmans, Green & Co., 1894.

Abstracts: Am. Jour. Sci., 3d ser., vol. xlviii, pp. 73–74; Jour. of Geol., vol. ii, pp. 747–750, by T. C. Chamberlin.

361 **Lincoln** (D. F.). The amount of glacial erosion in the Finger Lake region of New York.

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 105–113.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xlii, pp. 177–178.

Describes the outcrops of Silurian and Devonian strata and the topography and glaciated deposits in this region. Discusses the origin of the trough-like lake basins and includes a bibliography.

362 **Lindgren** (Waldemar). Sacramento folio. California.

U. S. Geol. Surv., Geologic Atlas of the United States, folio 5.

Describes the geology of the gold belt of California and the occurrence of the auriferous slates, igneous rocks, Tertiary and Pleistocene strata, and the gold, copper, and iron deposits of the region. Includes topographic, colored areal geologic, economic geologic, and structure section maps.

363 —— The gold-silver mines of Ophir, Cal.

U. S. Geol. Surv., 14th Ann. Rept., pt. 2, pp. 243–284, pls. xvii–xviii.

Describes the topographic and geologic features of the region, the petrographic characters of the granodiorite, amphibolite, and dike rocks, the different vein systems, the mineralogic characters of the ores, and the distribution of gold and silver in the veins. Discusses the movements along the veins and gives the author's conclusions.

364 —— An auriferous conglomerate of Jurassic age from the Sierra Nevada.

Am. Jour. Sci., 3d ser., vol. xlviii, pp. 275–280.

Describes the lithologic character and the structure of the Mariposa and Calaveras formations of Jurassic and Carboniferous age occurring in Placer County, Cal., and gives a summary of the author's conclusions.

365 —— and **Turner** (H. W.). Placerville folio. California.

U. S. Geol. Surv., Geologic Atlas of the United States, folio 3.

Describes the general geology of the gold belt of California and the occurrence and distribution of the auriferous slates and Neocene gold-bearing gravels of the region. Includes topographic, colored areal geologic, economic geologic, and structure section maps.

366 **Lonsdale** (E. H.). Southern extension of the Cretaceous in Iowa.

Iowa Acad. Sci., Proc., vol. i, pt. iv, pp. 39–43.

Mentions some of the exposures of the Cretaceous in Iowa and describes the topography of the region in which they occur and the removal of portions of these beds by the glacial ice sheet.

367 —— Topography of the granite and porphyry region of Missouri.

Iowa Acad. Sci., Proc., vol. i, pt. iv., pp. 43–48.

Describes the topography of the region and its relation to the Archean and Cambrian rocks of the region.

368 **Luther** (D. D.). Report on the geology of the Livonia salt shaft [New York].

N. Y. State Mus., 47th Ann. Rept., pp. 219–324.

Describes the geologic formations passed through in sinking the Livonia shaft to a depth of 1,432 feet and gives the vertical section displayed and a list of fossils found at various horizons.

369 **Lyman** (Benjamin Smith). Age of the Newark brownstone.

Am. Phil. Soc., Proc., vol. xxxiii, pp. 5–10.

Abstract: Am. Geol., vol. xiii, p. 284 (6 l.).

Quotes from several descriptions of fossils found at this horizon, which indicate that some of these beds may be of Paleozoic rather than of Mesozoic age.

370 —— Some new red horizons.

Am. Phil. Soc., Proc., vol. xxxiii, pp. 192–215, three plates.

Abstracts: Jour. of Geol., vol. ii, pp. 644–645; Am. Nat., vol. xxviii, pp. 878–879.

Reviews the evidences on which the red horizons east of the Blue Ridge have been assigned to the Mesozoic. Describes the outcrops in Connecticut, New Jersey, Pennsylvania, Virginia, and North Carolina, and gives lists of all the fossils found at different localities in these States. Considers that certain of these beds may be of Permian age.

371 —— Some Coal Measure sections near Peytona, W. Va.

Am. Phil. Soc., Proc., vol. xxxiii, pp. 282–309, two maps and cross sections.

Describes a large number of exposures of the Coal Measures in this region.

372 —— The name "Newark" in American stratigraphy.

Jour. of Geol., vol. ii, pp. 59–61.

Differs with G. K. Gilbert as to the use of the term "Newark." See No. 217.

M.

373 **McCalley** (Henry). Bauxite mining.

Science, vol. xxiii, pp. 29–30.

Describes the character and chemical composition of some of the Georgia and Alabama bauxite deposits.

374 **McCallie** (S. W.). A preliminary report on the marbles of Georgia.

Ga. Geol. Surv., Bull. No. 1, p. 87.

Gives a historical sketch of the marble industry, discusses the origin of limestones, and describes the marbles of Fannin, Gilmer, Pickens, and Cherokee counties, Ga.

375 **McCarn** (H. L.). Notes on the geology of the gold field of Cripple Creek, Colorado.

Science, vol. xxiii, pp. 31–35.

Describes the structure of the ore bodies and discusses the evidence as to their origin.

376 **McGee** (W J). The potable waters of eastern United States.

U. S. Geol. Surv., 14th Ann. Rept., pt. 2, pp. 1–47, figs. 1–5.

Describes the occurrence and source of potable waters and the methods of obtaining and utilizing cistern water, stream water, ground water, and phreatic water supplies.

377 **McGee** (W J). [Extra-morainic drift of New Jersey.]
Geol. Soc. Am., Bull., vol. v, pp. 17-18.
Discusses the evidences which have been found of the existence of glacial deposits south of the terminal moraine in New Jersey.

378 —— [Terrestrial submergence southeast of the American Continent.]
Geol. Soc. Am., Bull., vol. v, pp. 21-22.
In discussion of paper by J. W. Spencer on the same subject.

379 —— [Cenozoic history of eastern Virginia and Maryland.]
Geol. Soc. Am., Bull., vol. v, p. 24 (⅓ p.).
In discussion of paper by N. H. Darton on the same subject.

380 —— [On the Columbia and Lafayette formations.]
Geol. Soc. Am., Bull., vol. v, p. 100 (⅓ p.).
Describes the relations of the Columbia and Lafayette formations, in the discussion of a paper by Warren Upham on "The succession of Pleistocene formations in the Mississippi and Nelson River basins."

381 —— Graphic comparison of post-Columbia and post-Lafayette erosion.
Abstracts: Am. Assoc. Adv. Sci., Proc., vol. xlii, p. 179 (¼ p.); Am. Geol., vol. xii, p. 180 (⅛ p.).

382 —— Glacial canyons.
Jour. of Geol., vol. ii, pp. 350-364.
Discusses the effects of the several agencies involved in the development of glacial canyons.

383 —— [Correlation of clastic rocks.]
Int. Cong. Geol., Compte Rendu, 5th session, pp. 160-166.
Explains the principles of correlation developed in the study of the Coastal Plain and Atlantic and Gulf slopes of the United States.

384 —— [Classification of Pleistocene deposits.]
Int. Cong. Geol., Compte Rendu, 5th session, pp. 198-207.
Remarks on the importance of land forms as products of geologic agencies in Pleistocene time, discusses the claims of genetic classification, and presents the author's scheme of a classification of the Pleistocene deposits.

385 —— The Prairies. Itinerary from Kansas City, Mo., to Chicago, Ill.
Int. Cong. Geol., Compte Rendu, 5th session, pp. 449-452.
Describes the surface features of the prairies and the local geology between the points named along the route traversed by the western excursion of the International Congress of Geologists.

386 —— The Lafayette formation.
Review: Jour. of Geol., vol. ii, pp. 435-439, by J. W. Spencer.
Abstract: Am. Geol., vol. xiv, pp. 115-116.
Noticed in Bibliography and Index for 1892 and 1893.

387 —— **Williams** (G. H.), **Willis** (B.) and **Darton** (N. H.). Geology of Washington and vicinity.
Int. Cong. Geol., Compte Rendu, 5th session, pp. 219-251.
Describes the general and local physiography, the rocks of the Piedmont Plateau and the Coastal Plain, and the crystalline and clastic rocks of the immediate vicinity of Washington.

388 **Manson** (Marsden). A reply to "Causes and conditions of glaciation."

Am. Geol., vol. xiv, pp. 192-194 (correspondence).

Reviews statements of a recent paper on the same subject.

389 **Marcou** (Jules). Growth of knowledge concerning the Texas Cretaceous.

Am. Geol., vol. xiv, pp. 98-105.

Reviews the previous work on the Cretaceous deposits of Texas and gives a table of "Evolution of knowledge of the Texas Cretaceous."

390 —— Note on the geological map of the State of New York.

Am. Geol., vol. xiv, pp. 257-259 (correspondence).

Quotes from the 12th Ann. Report of the State Geologist for the year 1892, with comments.

391 **Marsh** (Othniel C.). Restoration of Camptosaurus.

Am. Jour. Sci., 3d ser., vol. xlvii, Appendix, pp. 245-246, pl. vi; Geol. Mag., dec. iv., vol. i, pp. 193-195, pl. vi; Sci. Am. Suppl., vol. xxxvii, pp. 15209-15210.

This restoration is based on a type specimen of Camptosaurus dispar from the Atlantosaurus beds of Wyoming.

392 —— Restoration of Elotherium.

Am. Jour. Sci., 3d ser., vol. xlvii, Appendix, pp. 407-408, pl. ix; Geol. Mag., dec. iv, vol. i, pp. 294-295, pl. x.

The restoration is based on type specimen of Elotherium crassum from the Miocene beds of Colorado and others from the same horizon of South Dakota.

393 —— A new Miocene mammal.

Am. Jour. Sci., 3d ser., vol. xlvii, Appendix, p. 409.

Describes and figures the last upper molar of an animal called Heptacodon curtus from the Miocene of South Dakota.

394 —— Footprints of vertebrates in the Coal Measures of Kansas.

Am. Jour. Sci., 3d ser., vol. xlviii, Appendix, pp. 81-84, pls. ii-iii; Geol. Mag., dec. iv, vol. i, pp. 337-339, pl. xi; Sci. Am. Suppl., vol. xxxviii, pp. 15491-15492.

Describes five new genera and species from the Carboniferous of Kansas.

395 —— The typical Ornithopoda of the American Jurassic.

Am. Jour. Sci., 3d ser., vol. xlviii, Appendix, pp. 85-90, pls. iv-vii.

Describes Camptosaurus, Dryosaurus, Laosaurus, and Nanosaurus.

396 —— Eastern division of the Miohippus beds, with notes on some of the characteristic fossils.

Am. Jour. Sci., 3d ser., vol. xlviii, Appendix, pp. 91-94.

Describes two new genera and five new species from the Miocene beds of Oregon.

397 —— Miocene Artiodactyla from the eastern Miohippus beds.

Am. Jour. Sci., 3d ser., vol. xlviii, Appendix, pp. 175-178, figs. 1-7.

Describes one new genus and a new species from the Miocene of South Dakota.

398 **Marsh** (Othniel C.). Description of Tertiary Artiodactyla.
Am. Jour. Sci., 3d ser., vol. xlviii, Appendix, pp. 259–274, figs. 1–34.
Review: Am. Nat., vol. xxviii, pp. 867–869.
Describes 13 new species and 3 new genera of ungulate mammals from the Miocene.

399 —— A gigantic bird from the Eocene of New Jersey.
Am. Jour. Sci., 3d ser., vol. xlviii, p. 344.
Describes Barornis regens from the upper marl beds.

400 —— A new Miocene tapir.
Am. Jour. Sci., 3d ser., vol. xlviii, p. 348 (½ p.).
Describes Tanyops undans from the Miocene of South Dakota.

401 —— [Correlation of clastic rocks.]
Int. Cong. Geol., Compte Rendu, 5th session, pp. 156–159.
Remarks on the study of the succession of vertebrate life and presents a columnar section to illustrate the vertebrate life in America.

402 **Marsters** (Vernon F.) and **Kindle** (E. M.). Geologic literature of Indiana (stratigraphic and economic).
Ind. Acad. Sci., Proc., 1893, pp. 156–191.
Comprises a bibliography and index of stratigraphic and economic geologic literature of Indiana.

403 **Matthew** (G. F.). Post-Glacial faults at St. John, New Brunswick.
Am. Jour. Sci., 3d ser., vol. xlviii, pp. 501–503, pl. xi.
Describes briefly faults of small displacement occurring in post-Glacial deposits.

404 —— Movements of the earth's crust at St. John, New Brunswick, in post-Glacial times.
New Brunswick Nat. Hist. Soc., Bull., No. xii, pp. 34–42.
Describes the character of certain recent faults in this vicinity, and gives a table showing the amount of each displacement.

405 —— The outlets of the St. John River [New Brunswick].
New Brunswick Nat. Hist. Soc., Bull., No. xii, pp. 43–62.
Describes the earlier outlets of this river and discusses the genesis of the valleys which form the drainage system of the region.

406 —— Ancient myriapods.
Can. Rec. Sci., vol. vi, pp. 93–99.
Reviews the previous description of fossil myriapods and gives a brief description of some of the characteristics of the several families.

406*a* —— Illustrations of the fauna of the St. John group, No. VIII.
Abstracts: Am. Jour. Sci., 3d ser., vol. xlviii, pp. 72–73 (⅓ p.); Am. Geol., vol. xiv, pp. 187–188.
Noticed in Bibliography and Index for 1892 and 1893.

407 **Matthew** (W. D.). The intrusive rocks near St. John, New Brunswick.
N. Y. Acad. Sci., Trans., vol. xiii, pp. 185–203, pl. v.
Describes the general character of the Laurentian rocks of the region and the petrographic characters of the granite-diorite and gabbro, and gives a summary of results.

408 **Matthew** (W. D.). The crystalline rocks near St. John, New Brunswick, Canada.

New Brunswick Nat. Hist. Soc., Bull., No. xii, pp. 16-33.

Describes the general character of the formations in this vicinity and discusses the origin and composition of igneous rocks. Describes the granite, gabbro, and volcanic rocks of the region.

408*a* —— Antennæ in trilobites.

Abstract: Am. Nat., vol. xxviii, pp. 266-267 (⅔ p.).

Noticed in Bibliography and Index for 1892 and 1893.

409 **Mawby** (W.). Notes on the Triassic rocks of New Jersey, United States of America.

Liverpool Geol. Soc., Proc., vol. vii, pp. 206-212.

Describes the general distribution of Triassic rocks of eastern North America and compares them with the Trias of Europe. Describes the general character and distribution of the glacial deposits of New Jersey.

410 **Meissner** (C. A.). Analysis of limestones and dolomites of the Birmingham (Ala.) district.

Ala. Ind. and Sci. Soc., Proc., vol. iv, pp. 12-23.

Describes the occurrence of limestone and dolomite in this region and gives chemical analyses of some of these rocks.

411 **Memminger** (C. J.). Florida kaolin deposits.

Eng. and Mg. Jour., vol. lvii, p. 436.

Brief description of kaolin deposits of Lake County, Fla., with a chemical analysis.

412 **Merrill** (George Perkins). [Beaver Creek meteorite.]

Am. Jour. Sci., 3d ser., vol. xlvii, p. 435.

Discusses the microscopic characteristics of this meteorite.

412*a* —— **Emmons** (S. F.) and. Geological sketch of Lower California.

Geol. Soc. Am., Bull., vol. v, pp. 489-514, pl. 19.

See Emmons (S. F.) and Merrill (G. P.), No. 184.

413 **Miller** (S. A.). Paleontology.

Ind. Dept. Geol. and Nat. Res., 18th Rept., pp. 257-333, pls. i-xii.

Describes a large number of new species, mainly from the Carboniferous and Silurian deposits of the Mississippi Valley.

414 —— and **Faber** (C. L). New species of fossils from the Hudson River group, and remarks upon others.

Cin. Soc. Nat. Hist., Jour., vol. xvii, pp. 22-33, pl. i.

Describes seven new species of fossils from the Silurian of Ohio.

415 —— Description of some Cincinnati fossils.

Cin. Soc. Nat. Hist., Jour., vol. xvii, pp. 137-158.

Describes ten new species from the Hudson River group of Ohio and Indiana.

415*a* **Minnesota, Geological and Natural History Survey.** Twenty-first Annual Report.

Abstracts: Am. Geol., vol. xiii, pp. 425-426; Am. Nat., vol. xxviii, p. 593 (⅓ p.).

415*b* **Minor** (J. C., jr.), **Penfield** (S. L.) and. On the chemical composition and related physical properties of topaz.

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 387–396.

See Penfield (S. L.) and Minor (J. C., jr.), No. 449.

416 **Moeller** (W. H.). The Mercur gold deposits in the Camp Floyd district, Utah.

Eng. and Mg. Jour., vol. lvii, p. 51 (correspondence).

Describes the character and structure of the gold deposits.

417 **Mudge** (E. H.). Drainage systems of the Carboniferous area of Michigan.

Am. Geol., vol. xiv, pp. 301–308.

Describes the topography and drainage systems of the Carboniferous area in Michigan and discusses the genesis of the river systems.

N.

418 **Nason** (Frank L.). The economic geology of Albany County [N. Y.].

N. Y. State Mus., 47th Ann. Rept., pp. 459–481, pls. 1-7.

Describes the occurrence of building stones, flagstones, clays, and sand banks in this county.

419 —— Economic geology of Ulster County [N. Y.].

N. Y. State Mus., 47th Ann. Rept., pp. 569–600, pls. 1–5.

Describes the occurrence of Rosendale or natural cement and the building stone and clays of this county.

420 —— Origin of the iron pyrites deposits in Louisa County, Va.

Eng. and Mg. Jour., vol. lvii, pp. 414–416.

Describes the vein formation of these ore bodies, compares them with the New Jersey iron ore deposits, and discusses the evidence as to the origin of the ores, and suggests that they were leached out from the shore rocks at the time of deposition of the inclosing sedimentaries, and were precipitated contemporaneously with the formation of the latter.

421 —— [The lead and zinc deposits of the Mississippi Valley.]

Am. Inst. Mg. Engrs., Trans., vol. xxii, pp. 636–642.

In discussion of paper by W. P. Jenney on the same subject.

422 —— The chemical composition of some of the white limestones of Sussex County, N. J.

Am. Geol., vol. xiii, pp. 154–164.

Gives several chemical analyses of the limestones in this county, and discusses the evidence indicating that the white crystalline limestone and the blue "magnesian" limestone are of contemporaneous origin.

423 —— Summary of facts proving the Cambrian age of the white limestones of Sussex County, N. J.

Am. Geol., vol. xiv, pp. 161–169.

Gives a summary and discussion of the evidences which indicate that the white limestones, heretofore considered to form a part of the Azoic crystalline rocks, belong to the Cambrian formation.

424 **Newell** (Frederick H.) Results of stream measurements.
U. S. Geol. Surv., 14th Ann. Rept., pt. 2, pp. 95–155, figs. 6–24.
Describes the character and methods of obtaining the data and gives the results obtained in different streams in the Western States.

424*a* **New Jersey, Geological Survey**. Annual Report, 1892.
Abstract: Am. Nat., vol. xxviii, pp. 336–337 (½ p.).

424*b* **Niles** (William H.). A geological study of Lake Mohonk and Lake Minnewaska, New York.
Abstract: Am. Geol., vol. xiii, p. 211 (7 l.).

425 **Norton** (William Harmon). Notes on the lower strata of the Devonian series in Iowa.
Iowa Acad. Sci., Proc., vol. i, pt. iv, pp. 22–24.
Divides the series mentioned into four stages, and describes the lithologic character of the beds and mentions some of the contained fossils.

O.

426 **Orton** (Edward). Geological scale and geological structure of Ohic.
Ohio Geol. Surv., vol. vii, pp. 3–44.
Gives a vertical section of the geologic formations of Ohio and describes their character and distribution.

427 —— The clays of Ohio, their origin, composition, and varieties.
Ohio Geol. Surv., vol. vii, pp. 45–68.
Describes the origin of clay beds and their geologic distribution.

428 —— The coal fields of Ohio.
Ohio Geol. Surv., vol. vii, pp. 253–290.
Discusses the origin of coal and describes the various coal seams of the Carboniferous strata in Ohio.

429 —— Geological surveys of Ohio.
Jour. of Geol., vol. ii, pp. 502–516.
Gives a historical sketch of the geological surveys of Ohio.

430 —— From the Ohio River to Chicago. Itinerary.
Int. Cong. Geol., Compte Rendu, 5th session, pp. 291–298.
Describes the region traversed by the Western excursion, with special reference to the gas wells.

431 **Orton** (Edward, jr.). The clay-working industries of Ohio.
Ohio Geol. Surv., vol. vii, pp. 69-254.
Describes the origin, chemical composition, and physical properties of clay, and gives an account of the clay-working industries.

431*a* **Osann** (A.). Eleolite rocks of Trans-Pecos, Texas.
Abstract: Am. Nat., vol. xxviii, pp. 514–515.
Noticed in Bibliography and Index for 1892 and 1893.

431*b* —— Nepheline-mellilite rocks of Texas.
Abstract: Am. Nat., vol. xxviii, pp. 799–800 (½ p.).
Noticed in Bibliography and Index for 1892 and 1893.

432 **Osborn** (H. F.). The evolution of teeth in Mammalia in its bearing upon the problem of phylogeny.
N. Y. Acad. Sci., Trans., vol. xii, p. 187.
Abstract: Am. Geol., vol. xiii, p. 357 (½ p.).

433 —— A division of the eutherian mammals into the Mesoplacentalia and Cenoplacentalia.
N. Y. Acad. Sci., Trans., vol. xiii, pp. 234–237.
Separates these mammals into two groups, one distinctive of the Mesozoic and the other of the Tertiary.

433*a* —— A new suborder of the Ancylopoda.
Abstract: Am. Geol., vol. xiii, p. 357 (9 l.).
Noticed in Bibliography and Index for 1892 and 1893.

433*b* —— and **Wortman** (J. L.). Fossil mammals of the Lower Miocene White River beds; collection of 1892.
Am. Mus. Nat. Hist., Bull., vol. vi, pp. 199–228, pls. ii–iii.
Gives a table showing the succession of species in the White River Miocene. Describes new characters of Rhinoceroses, the osteology of Metamynodon, and the characters of Oreodon and Anthracotherium.

P.

434 **Packard** (R. L.). Variscite from Utah.
Am. Jour. Sci., 3d ser., vol. xlvii, pp. 297–298.
Abstract: Am. Nat., vol. xxviii, p. 873 (5 l.).
Describes the characteristics of this material and gives its chemical analysis.

435 **Palache** (Charles). The soda-rhyolite north of Berkeley, Cal.
Univ. of Cal., Dept. of Geol., Bull., vol. i, pp. 61–72, pl. 5.
Abstract: Am. Nat., vol. xxviii, p. 602 (½ p.).
Describes the occurrence, geologic relations, and petrographic and chemical characteristics of a soda-rhyolite occurring in this vicinity.

436 —— The lherzolite-serpentine and associated rocks of the Potrero, San Francisco, Cal.
Univ. of Cal., Dept. of Geol., Bull., vol. i, pp. 161–180.
Describes the outcrops and petrographic character of the serpentine and of an intrusive rock, and discusses their relations to the San Francisco sandstone.

437 —— On a rock from the vicinity of Berkeley [Cal.] containing a new soda amphibole.
Univ. of Cal., Dept., of Geol., Bull., vol. i, pp. 181–192, pls. 10–11.
Describes the minerals and secondary veins of the rock and the microscopic and chemical characters of the amphibole.

438 **Patton** (Horace B.). Microscopic study of some Michigan rocks.
Michigan, Report of State Board of Geol. Surv. for 1891–92, pp. 184–186.
Describes the general characters of the igneous rocks of Michigan, with special mention of diabase altered to kaolin and quartz, and of hornblende picrite.

439 **Pavlow** (A.). [Classification of Pleistocene deposits.]
Int. Cong. Geol., Compte Rendu, 5th session, pp. 195–196.
Discusses the principles of chronologic and genetic classification.

440 **Peale** (Albert C.). Natural mineral waters of the United States.
U. S. Geol. Surv., 14th Ann. Rept., pt. 2, pp. 51–88.
Gives a definition of mineral water, discusses its origin, the source of mineralization, and its geologic and geographic distribution and gives a list of American mineral spring resorts.

441 —— Livingston to the Snake Plains. Itinerary, Bozeman to Butte, Mont.
Int. Cong. Geol., Compte Rendu, 5th session, pp. 365–367.
Describes the geology of the route traversed by the Rocky Mountain excursion between these points.

441*a* —— The Paleozoic section in the vicinity of Three Forks, Montana. With petrographic notes by G. P. Merrill.
Abstract: Am. Geol., vol. xiv, p. 394 (½ p.).
Noticed in Bibliography and Index for 1892 and 1893.

441*b* **Pearce** (Richard). The occurrence of gold in ores of the Cripple Creek district [Colorado].
Abstract: Eng. and Mg. Jour., vol. lvii, p. 271.
Noticed in Bibliography and Index for 1892 and 1893.

442 **Peckham** (S. F.). On the origin of bitumens; a retrospect.
Am. Jour. Sci., 3d ser., vol. xlviii, pp. 389–395.
Gives an account of observations in different parts of the United States on the occurrence of petroleum and bitumen, and concludes that they have not had a uniform derivation, and discusses the probability of their distillation by metamorphic action.

443 —— Petroleum in southern California.
Science, vol. xxiii, pp. 74–75.
Gives a historical sketch of the development of the petroleum industry in California, and presents a section showing the succession of strata in certain wells.

443*a* **Peet** (C. E), **Salisbury** (R. D.) and. Surface geology. Drift phenomena of the Palisade ridge.
N. J. Geol. Surv., Rept. for 1893, pp. 157–224.
See Salisbury (R. D.) and Peet (C. E.), No. 493.

444 **Penfield** (S. L.). Contributions to the crystallization of willemite.
Am. Jour. Sci., 3d ser., vol. xlvii, pp. 305–309.
Abstract: Am. Nat., vol. xxviii, pp. 873–874 (½ p.).
Describes the crystallographic characters and cleavage of willemite from New Mexico.

445 —— On the crystallization of herderite.
Am. Jour. Sci., 3d ser., vol. xlvii, pp. 329–339.
Abstracts: Am. Geol., vol. xiii, p. 427 (8 l.); Am. Nat., vol. xxviii, p. 871 (½ p.).
Describes the characteristics of herderite from five localities in Maine.

446 **Penfield** (S. L.). Mineralogical notes.

Am. Jour. Sci., 3d ser., vol. xlviii, pp. 114–118.

Describes the crystallographic characters of octahedrite from Arkansas, penfieldite, and the cleavage and parting planes of orthoclase and albite.

446*a* —— Pentlandite.

Abstract: Am. Nat., vol. xxviii, p. 519 (¼ p.).

Noticed in Bibliography and Index for 1892 and 1893.

447 —— and **Howe** (W. T. H.). On the chemical composition of chondrodite, humite, and clinohumite.

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 188–206.

Abstracts: Am. Nat., vol. xxviii, pp. 872–873 (¾ p.); Am. Geol., vol. xiii, pp. 358–359 (½ p.).

Describes the crystallographic characters of chondrodite from Warsaw and Brewster, N. Y.

448 —— and **Kreider** (D. A.). Mineralogical notes.

Am. Jour. Sci., 3d ser., vol. xlviii, pp. 141–144.

Discusses the identity of hydrofranklinite and chalcophanite.

449 —— and **Minor** (J. C., jr.). On the chemical composition and related physical properties of topaz.

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 387–396.

Abstract: Am. Geol., vol. xiii, p. 427 (10 l.).

Gives a list of the localities from which the specimens examined were obtained and the chemical analyses of some of the specimens, discusses the related physical properties, and compares the characteristics of topaz and herderite.

450 **Penhallow** (D. P.). Note on inter-Glacial plants from the Don Valley [Ontario].

Am. Geol., vol. xiii, pp. 93–95.

Describes Fraxinus quadrangulata Michx., Taxus baccata L. var. canadensis Gray, and Quercus obtusiloba Michx.

451 —— Notes on Erian (Devonian) plants from New York and Pennsylvania.

U. S. Nat. Mus., Proc., vol. xvi, pp. 105–114, pls. ix–xiv.

Describes and figures a number of new species found in Devonian strata at different localities of the States named.

452 **Penrose** (R. A. F., jr.). The superficial alteration of ore deposits.

Jour. of Geol., vol. ii, pp. 288–317.

Discusses the relation of alteration in ore deposits and in country rocks, the agents, method, chemical and physical effects, and depth of alteration, and the characteristics of alteration in iron, manganese, copper, lead, zinc, gold, silver, and other metallic deposits. Describes the formation of haloid compounds in ore deposits in arid regions.

453 **Phillips** (William B.). The phosphate rocks of Tennessee.

Eng. and Mg. Jour., vol. lvii, p. 417.

Describes the character of the phosphate rock of Hickman County, Tenn., and the lithologic character of the associated strata. Gives a typical vertical section of the beds, which are of Devonian age, and chemical analyses of the phosphate.

454 **Phillips** (William B.). On the phosphate rock of Tennessee.

Ala. Ind. Sci. Soc., Proc., vol. iv, pp. 44-48.

Gives a brief description of the phosphate rock and its chemical analysis.

454*a* **Piatt** (W. H. H.), **Haworth** (E.) and. A geologic section along the Verdigris River from the State line to Madison [Kans.].

Kans. Univ. Quart., vol. ii, pp. 115-118.

See Haworth (E.) and Piatt (W. H. H.), No. 257.

455 **Pirsson** (L. V.). On the crystallization of enargite.

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 212-215.

Abstracts: Am. Geol., vol. xiii, p. 359 (5 l.); Am. Nat., vol. xxviii, p. 870 (½ p.).

Describes the crystallographic characters of enargite from the Ida and National Belle mines of Colorado.

456 —— On some phonolite rocks from the Black Hills.

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 341-346.

Abstract: Am. Nat., vol. xxviii, pp. 702-703.

Describes the chemical and petrographic characters of phonolite, from the Black Hills.

456*a* —— The geology of Conanicut Island, Rhode Island.

Abstract: Am. Nat., vol. xxviii, pp. 420-421 (½ p.).

Noticed in Bibliography and Index for 1892 and 1893.

457 —— and **Wells** (H. L.). On the occurrence of leadhillite from Missouri, and its chemical composition.

Am. Jour. Sci., 3d ser., vol. xlviii, pp. 219-226.

Describes the occurrence, crystallographic characters, and chemical composition of leadhillite.

458 **Pollard** (C. L.). [Note on fossil leaves from Great Neck, Long Island, N. Y.]

N. Y. Acad. Sci., Trans., vol. xiii, pp. 180-181.

Note on the occurrence of fossil leaves in the Cretaceous on Long Island, N. Y.

459 **Poole** (Henry S.). The Pictou coal field; a geological revision.

Nova Scotian Inst. Sci., Proc. and Trans., 2d ser., vol. i, pp. 227-343, with geologic map and sections.

Describes several faults which occur in this district and the lithologic character of the Cambro-Silurian, Silurian, Devonian, Carboniferous, and Permian beds, and gives the sections exposed in a number of coal mines.

459*a* **Posada** (Juan de la C.). The geology of Carmelo Bay [California].

See Lawson (A. C.), No. 352.

460 **Posepny** (F.). The genesis of ore deposits.

Am. Inst. Mg. Engrs., Trans., vol. xxiii, pp. 197-369, figs. 1-100.

Reviews the general facts and theories concerning the origin of ore deposits, describes the constitution and effects of underground circulating waters, the character of ore deposits occurring in fissures and in soluble rocks, those occurring in distinctly stratified rocks and in crystalline schists and eruptive rocks, and those formed by chemical and mechanical influences of the surface region. Advocates the ascension theory of the formation of ore deposits.

461 **Powell** (John W.). Report of the Director.

U. S. Geol. Surv., 14th Ann. Rept., pt. i, p. 321.

Describes the plans for topography and geology for 1893–94, the progress of geologic work during 1892–93 in classifying and correlating sedimentary and igneous rocks, and gives a summary of the work in terrestrial physics. Includes the administrative reports of topographers and geologists in charge of the various divisions of the U. S. Geological Survey.

462 —— [Correlation of clastic rocks.]

Int. Cong. Geol., Compte Rendu, 5th session, pp. 159–160 (½ p.).

Considers that both physical and biotic evidence must be used in the correlation of rocks.

463 **Pratt** (J. H.). Mineralogical notes on cerrusite, calamine, and zircon.

Am. Jour. Sci., 3d ser., vol. xlviii, pp. 212–215.

Describes the crystallographic characters of cerrusite from Montana, calamine from Colorado, and zircon from Ontario.

464 **Prindle** (L. M.). Note on an apatite crystal from Alexander County, N. C.

Johns Hopkins Univ. Circ., vol. xiii, No. 112, p. 83.

Describes the crystallographic characters of the crystal.

465 **Prosser** (Charles S.). The Devonian system of eastern Pennsylvania and New York.

U. S. Geol. Surv., Bull. No. 120, pp. ix+81, pls. i-ii, fig. 1.

Describes the lithologic character of the Devonian beds along several section lines in eastern Pennsylvania and New York and gives lists of fossils collected and the author's conclusions.

466 **Pumpelly** (Raphael). Geology of the Green Mountains in Massachusetts.

U. S. Geol. Surv., Monograph xxiii, pp. 34, pls. i-iii, figs. 1–8.

Discusses the structure and correlation of the Archean, Algonkian, Cambrian, and Silurian strata of the region.

467 —— [Correlation of clastic rocks.]

Int. Cong. Geol., Compte Rendu, 5th session, pp. 173–174.

Remarks on the correlation of the deposits of the Lake Superior region.

468 **Purington** (Chester Wells). Geological and topographical features of the region about Atlanta, Ga.

Am. Geol., vol. xiv, pp. 105–108, with map of Georgia and sections.

Describes peculiar topographic forms resulting from the long-continued action of the atmosphere on the red clay and soils, which are the products of the disintegration of the gneiss of the region.

R.

469 **Rand** (Theodore D.). The Sadsbury steatite [Pennsylvania].

Phil. Acad. Nat. Sci., Proc., 1894, pp. 455–460.

Describes the outcrops of steatite occurring in Chester County, Pa.

470 **Randall** (F. A.). Preliminary report on the geology of Cattaraugus and Chautauqua Counties [N. Y.].

N. Y. State Mus., 47th Ann. Rept., pp. 713–719.

Gives diagrammatic, vertical, and cross sections of the strata of these counties, with notes on the distribution of the several formations.

471 **Ransome** (F. Leslie). The eruptive rocks of Point Bonita.

Univ. of Cal., Dept. of Geol., Bull., vol. i, pp. 71–114, pls. 6–7.

Abstracts: Am. Geol., vol. xiv, pp. 321–326; Am. Nat., vol. xxviii, p. 419.

Describes the occurrence and petrographic characters of the spheroidal basalt and diabase, the relations of the eruptive rocks, and the character and occurrence of sedimentary rocks and their relations to the eruptive rocks in this vicinity.

472 —— The geology of Angel Island [California].

Univ. of Cal., Dept. of Geol., Bull., vol. i, pp. 193–233.

Abstract: Jour. of Geol., vol. ii, pp. 863–864.

Describes the sedimentary formations and the occurrence, petrographic character, and contact metamorphism of the fourchite and serpentine rocks, and gives chemical analyses of the fourchite and serpentine.

473 **Rauff** (Hermann). Palæospongiologie. Erster Theil.

Paleontographica, Band. 40, pp. 1–346.

Reviews the literature of the subject and describes species, including a number from the Paleozoic strata of different parts of North America.

474 **Raymond** (R. W.). A new classification of economic geological deposits.

Eng. and Mg. Jour., vol. lviii, pp. 412–413.

Discusses the principles of classification in general and reviews the proposed classification of W. O. Crosby.

475 **Reid** (Harry F.). [On the upward movement within a glacier.]

Geol. Soc. Am., Bull., vol. v, pp. 84–85 (½ p.).

In discussion of paper by W. Upham on "Evidences of the derivation of the kames, eskers, and moraines of the North American ice sheet, chiefly from its englacial drift."

476 **Rickard** (T. A.). [The genesis of ore deposits.]

Am. Inst. Mg. Engrs., Trans., vol. xxiii, pp. 589–591.

In discussion of paper on the same subject by F. Posepny.

477 **Ries** (Heinrich). A Pleistocene lake bed at Elizabethtown, Essex County, N. Y.

N. Y. Acad. Sci., Trans., vol. xiii, pp. 107–109.

Describes the formation of this lake bed and the process of lake filling now going on.

478 —— On some new forms of wollastonite from New York.

N. Y. Acad. Sci., Trans., vol. xiii, pp. 146–147 and 207–208.

Describes the crystallographic characters of this mineral.

479 **Ries** (Heinrich). Microscopic organisms in the clays of New York State.

N. Y. Acad. Sci., Trans., vol. xiii, pp. 165–169.

Contains notes on the occurrence of diatoms in these clays and a list of species found.

480 —— On the occurrence of Cretaceous clays at Northport, Long Island [N. Y.].

School of Mines Quart., vol. xv, pp. 354–355.

Gives a list of fossil plants found in these beds which indicate that they are of Cretaceous age.

481 **Rowley** (R. R.). New species of crinoids and brachiopods from the Missouri Hamilton.

Am. Geol., vol. xiii, pp. 151–154, figs. 1–10.

Describes four new species from the Hamilton beds of Callaway County, Mo.

481*a* **Russell** (Israel C.). Second expedition to Mount St. Elias, in 1891.

Abstract: Am. Geol., vol. xiv, pp. 190–191.

Noticed in Bibliography and Index for 1892 and 1893.

481*b* —— A geological reconnoissance in central Washington.

Abstract: Am. Geol., vol. xiv, pp. 51–52 (½ p.).

Noticed in Bibliography and Index for 1892 and 1893.

481*c* —— Malaspina glacier.

Abstract: Am. Nat., vol. xxviii, pp. 1025–1027.

Noticed in Bibliography and Index for 1892 and 1893.

482 **Rutley** (Frank). On the origin of certain novaculites and quartzites.

Geol. Soc. London, Quart. Jour., vol. l, pp. 377–392, pl. xix.

Abstract: Am. Geol., vol. xiv, p. 253 (½ p.).

Quotes from a paper by L. S. Griswold on the novaculites of Arkansas, and discusses the evidences as to the origin of these rocks.

S.

483 **Safford** (James M.). Phosphate-bearing rocks in middle Tennessee; preliminary notice.

Am. Geol., vol. xiii, pp. 107–109.

Describes the lithologic characters of the Devonian strata in which the phosphate occurs and the character of the phosphatic material.

484 **Salisbury** (Rollin D.). Superglacial drift.

Jour. of Geol., vol. ii, pp. 613–632.

Describes the character of superficial drift of alpine glaciers, piedmont glaciers, and of a continental ice sheet.

485 —— The drift: its characteristics and relationships.

Jour. of Geol., vol. ii, pp. 708–724 and 837–851.

Defines drift and describes the thickness, lithologic composition, and structure of the drift, the topography of the drift and drift-covered area, the relation of the drift to the underlying rock, and the characteristics of the rock underlying the drift.

486 **Salisbury** (Rollin D.). Surface geology: the Yellow gravel.
N. J. Geol. Surv., Rept., 1893, pp. 39–72.
Describes the deposition and distribution of the Yellow gravel. Discusses the evidences as to the age of these beds.

487 —— Surface geology: extra-morainic drift.
N. J. Geol. Surv., Rept., 1893, pp. 73–123.
Describes the character and distribution of the drift on the Triassic formation and on the area to the north of it.

488 —— Surface geology: the terminal moraine.
N. J. Geol. Surv., Rept., 1893, pp. 124–151.
Describes the course of the terminal moraine in New Jersey as shown on the map which accompanies the report.

489 —— Surface geology: drift deposits made under the influence of stagnant ice.
N. J. Geol. Surv., Rept., 1893, pp. 152–156.
Describes a peculiar type of terraces formed between a valley ice lobe and the bounding rock slope of the valley.

490 —— [On the twofold division of the Columbia formation.]
Geol. Soc. Am., Bull., vol. v, p. 24 (⅓ p.).
In discussion of paper by N. H. Darton on the "Cenozoic history of eastern Maryland and Virginia."

491 —— [Time break between the Lafayette and Columbia formations.]
Geol. Soc. Am., Bull., vol. v, p. 100 (6 l.).
In discussion of paper on the "Succession of Pleistocene formations in the Mississippi and Nelson River basins," by Warren Upham.

491*a* —— A phase of superficial drift.
Abstract: Am. Assoc. Adv. Sci., Proc., vol. xlii, p. 180 (7 l.).

491*b* —— An illustration of the effect of stagnant ice in Sussex County, N. J.
Abstract: Am. Assoc. Adv. Sci., Proc., vol. xlii, p. 180 (⅔ p.).

492 —— and **Kümmel** (Henry B.). Surface geology: Lake Passaic; an extinct glacial lake.
N. J. Geol. Surv., Rept., 1893, pp. 225–328.
Discusses the classification of shore features and lacustrine deposits and describes the shores of Lake Passaic, its lacustrine deposits, and the history and deformation of the lake basin.

493 —— and **Peet** (Charles E.). Surface geology: drift phenomena of the Palisade ridge.
N. J. Geol. Surv., Rept., 1893, pp. 157–224.
Describes the topographic relations of the ridge, the glacial striæ and erosion, the perched blocks, and other glacial phenomena.

494 **Sardeson** (F. W.) Note on "Nanno."
Am. Geol., vol. xiv, pp. 402–403 (correspondence).
Refers to a previous article and descriptions.

495 **Schuchert** (Charles.) A revised classification of the spire-bearing brachiopods.

Am. Geol., vol. xiii, pp. 102-107.

Describes the family and subfamily characters on which the new classification is based.

495*a* —— Spire-bearing genera of the Paleozoic Brachiopoda, Paleozoic of New York, vol. viii, part ii, fas. i.

Review: Am. Geol., vol. xiii, pp. 128-132.

Gives an abstract of "An Introduction to the study of the genera of the Paleozoic Brachiopoda," by James Hall, assisted by John M. Clarke; Paleontology of New York, vol. viii, part ii, fas. i.

495*b* —— **Diller** (J. S.) and. Discovery of Devonian rocks in California.

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 416-422.

See Diller (J. S.) and Schuchert (C.), No. 154.

496 **Scott** (William B.) Notes on the osteology of Agriochœrus Leidy (Artionyx O. and W.).

Am. Phil. Soc., Proc., vol. xxxiii, pp. 243-251.

Abstract: Am. Nat., vol. xxviii, pp. 952-953 (⅓ p.).

Describes and figures fragmentary skeletons from the White River bad lands of South Dakota and discusses the systematic position of the genus.

497 —— The structure and relationships of Ancodus.

Phil. Acad. Nat. Sci., Jour., 2d ser., vol. ix, pp. 461-497 and 536, pls. xxiii-xxiv.

Describes the dentition, skull, vertebral column, and limbs of A. brachyrhynchus, and discusses the relationships of Ancodus.

498 —— The osteology of Hyænodon.

Phil. Acad. Nat. Sci., Jour., 2d ser., vol. ix, pp. 499-535.

Describes a new species and gives a restoration of Hyænodon and discusses its relationships.

499 —— Notes on the osteology of Ancodus (Hyopotamus).

Geol. Mag., dec. iv, vol. i, pp. 492-493.

Describes the principal characteristics of Ancodus brachyrhynchus from material found in the Tertiary beds of South Dakota.

499*a* —— Mammalia of the Deep River beds.

Abstract: Am. Nat., vol. xxviii, pp. 790-791.

Noticed in Bibliography and Index for 1892 and 1893.

500 —— The later Tertiary lacustrine formations of the West.

Abstracts: Geol. Soc. Am., Bull., vol. v, pp. 594-595; Am. Jour. Sci., 3d ser., vol. xlvii, pp. 139-140 (½ p.); Am. Geol., vol. xiii, pp. 141-142.

Describes the distribution and faunal characteristics of the later Tertiary beds in western United States.

501 **Scudder** (Samuel H.). The effect of glaciation and of the Glacial period on the present fauna of North America.

Am. Jour. Sci., 3d ser., vol. xlviii, pp. 179-187.

In tabular form gives a list of described American Quaternary Coleoptera, showing their locality and the forms to which they are allied, their regional distribution in North America, and the species common to different regions.

502 **Scudder** (Samuel H.). Tertiary Tipulidæ, with special reference to those of Florissant, Colo.

Am. Phil. Soc., Proc., vol. xxxii, pp. 163–245, pls. i–ix.

Abstracts: Am. Jour. Sci., 3d ser., vol. xlvii, p. 481 (½ p.); Am. Nat., vol. xxviii, pp. 951–952.

Gives a historical account and list of the European Tertiary Tipulidæ and description of species from Colorado.

502*a* —— American Tertiary Aphidæ.

Abstract: Am. Nat., vol. xxviii, p. 881 (⅓ p.).

Noticed in Bibliography and Index for 1892 and 1893.

502*b* —— Insect fauna of the Rhode Island coal field.

Abstract: Am. Geol., vol. xiv, p. 330 (½ p.).

Noticed in Bibliography and Index for 1892 and 1893.

503 **Seamon** (W. H.). The present condition of the earth's interior as viewed from the standpoint of the nebular hypothesis.

Am. Geol., vol. xiv, pp. 20–25.

Discusses the different theories as to the condition of the interior of the earth.

504 **Selwyn** (Alfred R. C.). Volcanic rocks in the Keewatin.

Science, vol. xxiii, pp. 107–108.

In a letter to Professor Dana, dated Montreal, December 9, 1879, discusses the character of volcanic rocks in pre-Cambrian strata.

505 **Shaler** (Nathaniel Southgate). Pleistocene distortions of the Atlantic seacoast.

Geol. Soc. Am., Bull., vol. v, pp. 199–202.

Abstracts: Am. Jour. Sci., 3d ser., vol. xlvii, p. 138 (½ p.); Am. Geol., vol. xiii, pp. 143–144.

Discusses the evidences of orogenic action in Pleistocene time in the region of Marthas Vineyard, and the extent, character, and origin of the movements.

506 —— Relation of mountain growth to formation of continents.

Geol. Soc. Am., Bull., vol. v, pp. 203–206.

Abstracts: Am. Jour. Sci., 3d ser., vol. xlvii, pp. 138–139 (⅓ p.); Am. Geol., vol. xiii, p. 144 (½ p.).

Describes the limitations as to the positions of mountains, and discusses the origin and occurrence of the broad belt of crust which supports the arches of strata formed by mountain-building forces, and on which the mountains lie in short ridges. Discusses the causes of mountain uplifting above sea level.

507 —— Phonomena of beach and dune sands.

Geol. Soc. Am., Bull., vol. v, pp. 207–212.

Abstracts: Am. Jour. Sci., 3d ser., vol. xlvii, p. 139 (⅓ p.); Am. Geol., vol. xiii, pp. 144–145 (⅓ p.).

Discusses the causes of the resistance of beach sands to erosion, and describes their action in protecting seacoasts from erosion and their source of supply. Describes the resistance of dune sands to the percolation of water and the manner in which the material is transported.

508 **Shaler** (Nathaniel Southgate). On the distribution of earthquakes in the United States since the close of the Glacial period.

Bost. Soc. Nat. Hist., Proc., vol. xxvi, pp. 246–256.

Abstract: Am. Geol., vol. xiv, pp. 396–397 (½ p.).

Discusses the evidences of earthquake shocks indicated by the action of the ocean wave in moving poised blocks and unstable topographic forms along coast lines and by the overturning of unstable bodies on land. Gives the results of observations of these phenomena on the coast lines of the United States.

508*a* —— The origin and nature of soils.

Am. Geol., vol. xiv, pp. 114–115 (½ p.).

Noticed in Bibliography and Index for 1892 and 1893.

508*b* **Sherborn** (Charles Davies). An index to the genera and species of Foraminifera.

Smith. Inst., Misc. Coll., vol. xxxvii, pt. i (a to non) ii+240 pp.

509 **Siebenthal** (C. E.). The geology of Dallas County, Ark.

Ark. Geol. Surv., Ann Rept., 1891, vol. ii, pp. 279–318.

Describes the topographic and geologic features of the county and the occurrence of potter's clay.

510 **Simonds** (Frederick W.). [Glacial geology of Lake Cayuga and vicinity, New York.]

Am. Geol., vol. xiv, pp. 58–62 (correspondence).

Reviews the paper by R. S. Tarr on Lake Cayuga, a rock basin.

511 —— and **Hopkins** (T. C.). The geology of Benton County, Ark.

Ark. Geol. Surv., Ann. Rept., 1891, vol. ii, pp. 1–75.

Describes the topographic features of the county, the drainage and springs, the lithologic character and distribution of the Silurian, Devonian, and Carboniferous formations, and the character and occurrence of economic products.

512 **Simpson** (Charles T.). On some fossil unios and other fresh-water shells from the drift at Toronto, Canada; with a review of the distribution of the Unionidæ of northeastern North America.

U. S. Nat. Mus., Proc., vol. xvi, pp. 591–595.

Gives a list of the fossils collected and discusses the geologic and geographic distribution of the Unionidæ in northeastern North America.

513 **Simpson** (George B.). A discussion of the different genera of Fenestellidæ.

N. Y. State Mus., 47th Ann. Rept., pp. 881–921.

Discusses the relations of the genera and includes remarks on the various genera of Fenestellidæ.

514 —— Glossary and explanations of specific names of Bryozoa and corals described in volume vi, Palæontology of New York, and other reports.

N. Y. State Mus., 47th Ann. Rept., pp. 925–941.

515 **Smith** (Eugene A.). Geological surveys in Alabama.

Jour. of Geol., vol. ii, pp. 275–287.

Gives an account of the operations of the various geological surveys of Alabama.

516 —— The post-Eocene formations of the Coastal Plain of Alabama.

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 285–296.

Describes the Pleistocene, Pliocene, Miocene, and Eocene deposits of Alabama and reviews previous descriptions of these and other beds of the Mississippi Valley.

517 —— Geological map and explanatory chart of Alabama.

Ala. Geol. Surv., Montgomery, Alabama.

Contains a colored geologic map of the State and a sheet explaining the lithologic character and distribution of the formations.

518 —— **Langdon** (Daniel W., jr.), and **Johnson** (Lawrence C.). On the geology of the Coastal Plain of Alabama, Cretaceous, Tertiary, and post-Tertiary formations.

Ala. Geol. Surv., pp. xxiv+759, pls. i–xxix.

Contains a general sketch of the geology of Alabama and a description of the lithologic and faunal characters, and the distribution in Alabama of the Cretaceous, Tertiary, and post-Tertiary formations.

519 **Smith** (Erastus G.). Artesian wells as a source of water supply.

Sci. Am. Suppl., vol. xxxvii, pp. 15065–15066.

Discusses briefly the geologic conditions essential to the existence of artesian wells and the chemical character of artesian water supply.

520 **Smith** (George Otis). Notes on crystals of scapolite, gypsum, and fayalite recently acquired by the university cabinet.

Johns Hopkins Univ. Circ., vol. xiii, No. 112, pp. 81–83.

Describes the crystallographic characters of the crystals mentioned.

521 **Smith** (James Perrin). The Arkansas Coal Measures in their relation to the Pacific Carboniferous province.

Jour. of Geol., vol. ii, pp. 187–203.

Abstract: Am. Jour. Sci., 3d ser., vol. xlvii. p. 482 (10 l.).

Compares the Coal Measures of Arkansas with the Permo-Carboniferous beds of Kansas and Nebraska and discusses the classification and age of the Arkansas coal beds and the character of the Carboniferous strata in other parts of western United States. Presents a table showing the correlation of the Arkansas Coal Measures with those of the Pacific Carboniferous province.

522 —— The metamorphic series of Shasta County, Cal.

Jour. of Geol., vol. ii, pp. 588–612.

Describes the geologic structure in this county and the lithologic character and fauna of the Carboniferous and Juratrias formations.

523 —— Age of the Auriferous slates of the Sierra Nevada.

Geol. Soc. Am., Bull., vol. v, pp. 243–258.

Abstracts: Am. Geol., vol. xiii, p. 215 (⅕ p.); Am. Nat., vol. xxviii, pp. 414–415 (¼ p.).

Reviews the opinions of other writers on this subject and the results shown by recent discoveries and determination of fossil forms from the Carboniferous, Triassic, and Jurassic strata at different localities in the Sierra Nevada. Discusses the correlation of the Mariposa and Aucella-bearing rocks with the Jura of Europe.

524 **Smyth** (C. H., jr.). On gabbros in the southwestern Adirondack region [New York].

Am. Jour. Sci., 3d ser., vol. xlviii, pp. 54-65.

Describes the petrographic characters of the gabbro of the southwest corner of Hamilton County and the contact of the gabbro and gneiss.

525 —— A group of diabase dikes among the Thousand Islands, St. Lawrence River.

N. Y. Acad. Sci., Trans., vol. xiii, pp. 209-214.

Describes the occurrence of the dikes and the microscopic character of the dike rocks.

526 —— Report on a preliminary examination of the general and economic geology of four townships in St. Lawrence and Jefferson counties [N. Y.].

N. Y. State Mus., 47th Ann. Rept., pp. 687-709, with map.

Describes the character of the crystalline and sedimentary rocks of the region, and discusses the evidences as to their stratigraphic relations. Discusses the evidences as to the origin of the iron ores of the region, and describes the talc and marble industries.

527 —— On a basic rock derived from granite.

Jour. of Geol., vol. ii, pp. 667-679.

Abstract: Am. Geol., vol. xiv, p. 195 (10 l.).

Describes the character and origin of the rock and the microscopic and chemical characteristics of the alteration product occurring in hematite deposits of Jefferson County, N. Y.

528 **Smyth** (Henry Lloyd). Relations of the Lower Menominee and Lower Marquette series in Michigan (preliminary).

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 216-223.

Abstract: Am. Geol., vol. xiii, p. 359 (½ p.).

Describes the lithologic characters and succession of these two series, discusses their structure and distribution, and gives a summary of conclusions.

529 —— The quartzite tongue at Republic, Mich.

Jour. of Geol., vol. ii, pp. 680-691, figs. 1-5.

Describes the geologic structure of the region and the characteristics of the quartzite and jasper tongues that extend from the main mass of quartzite.

530 **Spencer** (Arthur C.). Occurrence in Iowa of fossiliferous concretions similar to those of Mazon Creek.

Iowa Acad. Sci., Proc., vol. i, pt. iv, p. 55.

Describes the occurrence of plant remains in the Carboniferous of Iowa.

531 **Spencer** (Joseph W.). Deformation of the Lundy Beach and birth of Lake Erie.

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 207-212.

Describes the formation of Lundy Beach and its effect on the drainage of the Great Lakes and gives an estimate of the rate of uplift in the Niagara district.

532 **Spencer** (Joseph W.). The duration of Niagara Falls.

Am. Jour. Sci., 3d ser., vol. xlviii, pp. 455–472

Abstracts: Am. Geol., vol. xiv, p. 204 (7 l.); Am. Nat., vol. xxviii, pp. 859–862.

Reviews the different opinions as to the age of the falls, describes the topography and geology of the region, and discusses the history of the Great Lakes and Niagara River, the age of the falls as shown by terrestrial movements, and the relationship of the falls to geologic time. Gives a summary of conclusions.

533 —— The rock basin of Cayuga Lake [New York].

Am. Geol., vol. xiv, pp. 134–135 (correspondence).

Reviews the evidence indicating that Lake Cayuga occupies a rock basin.

534 —— The age of Niagara Falls.

Am. Geol., vol. xiv, pp. 135–136 (correspondence).

Gives a brief statement of the results of the writer's studies in the region of the Great Lakes.

535 —— A review of the history of the Great Lakes.

Am. Geol., vol. xiv, pp. 289–301, pl. viii.

Discusses the evidence of a former high continental elevation and describes the character of the lake basin, the drainage of the region, the formation of the modern lakes, the history of the Niagara River, and the changes of the outlets of the lakes.

536 —— Terrestrial submergence southeast of the American Continent.

Abstracts: Geol. Soc. Am., Bull., vol. v, pp. 19–21; Am. Geol., vol. xii, p. 168 (⅔ p.); Am. Nat., vol. xxviii, p. 51 (⅔ p.).

Discusses the evidences of a submergence in this region.

537 —— Niagara Falls as a chronometer of geological time.

Abstract: Roy. Soc. of London, Proc., vol. l, pp. 145–148.

Communicated by Prof. T. G. Bonney.

538 —— The Yumuri Valley of Cuba.

Geol. Mag., dec. iv, vol. i, pp. 499–502.

Describes the formation of the valley in Pleistocene time.

538*a* —— The Paleozoic group: The geology of ten counties of northwestern Georgia and resources.

Abstract: Am. Jour. Sci., 3d ser., vol. xlvii, p. 78 (½ p.).

Review: Jour. of Geol., vol. ii, pp. 335–339, by E. A. Smith.

Noticed in Bibliography and Index for 1892 and 1893.

538*b* —— The drainage of the Great Lakes in the Mississippi by way of Chicago.

Abstract: Am. Nat., vol. xxviii, p. 884 (¼ p.), by the author.

538*c* —— The restoration of the Antillean Continent.

Abstract: Am. Nat., vol. xxviii, pp. 881–884, by the author.

539 **Spurr** (J. E.). The iron ores of the Mesabi range [Minnesota].
Am. Geol., vol. xiii, pp. 335–345.
Abstract: Eng. and Mg. Jour., vol. lvii, pp. 583–584.
Describes the structure of the rock formations, the character of the iron-bearing rocks and the changes they have undergone, and discusses the origin of the ore deposits.

540 —— The iron-bearing rocks of the Mesabi range, in Minnesota.
Minn. Geol. and Nat. Hist. Surv., Bull., No. x, pp. viii+259, pls. i-xii.
Abstract: Am. Geol., vol. xiv, pp. 251-252.
Review: Jour. of Geol., vol. ii, pp. 545-546, by T. C. Hopkins.
Describes the structure and stratigraphy of the range and the microscopic character of certain groups of the iron-bearing rocks. Discusses the classification of these rocks and the nature of the agents that have affected them, and the formation, structure, and origin of the ore bodies. Includes a summary statement of the author's conclusions.

541 —— Preliminary report on field work done in 1893.
Minn. Geol. and Nat. Hist. Surv., 22d Ann. Rept., pp. 115–124.
Describes the area mapped and the topographic and geologic methods employed. Discusses the origin and age of the granite of Giants range and describes the schists and Thompson slates of the Keewatin series, the Cretaceous outliers, and the glacial phenomena.

542 —— False bedding in stratified drift deposits.
Am. Geol., vol. xiii, pp. 43–47, figs. 1-2.
Describes the mode of formation of false bedding in a stratified drift deposit in northeastern Minnesota.

543 —— Oscillation and single current ripple marks.
Am. Geol., vol. xiii, pp. 201–206 (correspondence).
Continues the discussion of the evidence of ripple marks described in No. 542.

544 —— The stratigraphic position of the Thompson slates.
Am. Jour. Sci., 3d ser., vol. xlviii, pp. 159–166.
Describes the geographic distribution of this series in eastern Minnesota and their relations to the surrounding rocks. Reviews previous correlations, and discusses the evidences indicating their geologic age and their correlation with the Keewatin of the Mesabi range rather than with the Animikie.

545 **Stanton** (Timothy W.). [On some Mesozoic and Tertiary exhibits at the World's Columbian Exposition.]
Am. Geol., vol. xiii, pp. 289–290 (correspondence).
Refers to the nomenclature of certain specimens from the Cretaceous and their geographic and stratigraphic occurrence.

545*a* —— The Colorado formation and its invertebrate fauna.
Review: Jour. of Geol., vol. ii, pp. 751–752, by H. F. Bain.
Abstracts: Am. Nat., vol. xxviii, p. 510 (½ p.); Am. Geol., vol. xiv, p. 51 (½ p.).
Noticed in Bibliography and Index for 1892 and 1893.

545*b* —— **Diller** (J. S.) and. The Shasta-Chico series.
Geol. Soc. Am., Bull., vol. v, pp. 435–464.
See Diller (J. S.) and Stanton (T. W.), No. 155.

545*c* **Stanton** (Timothy W.), **Turner** (H. W.) and. Notes on the geology of the Coast range of California.

Am. Geol., vol. xiv, pp. 92–98.

See Turner (H. W.) and Stanton (T. W.), No. 566.

546 **Stevenson** (John J.). Origin of the Pennsylvania anthracite.

Geol. Soc. Am., Bull., vol. v, pp. 39–70, pl. 2.

Abstract; Am. Nat., vol. xxviii, pp. 160–161.

Describes the coal areas of Pennsylvania and discusses the extent of deformation of the coal basins and the causes of variation in the volatile combustibles of Pennsylvania coals. Discusses the evidences of metamorphism in the formation of coal, reviews the different theories, and gives the author's hypothesis as to the origin of coal beds.

546*a* —— Use of the name "Catskill."

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xlii, p. 171 (¼ p.).

547 **Storms** (W. H.). Ancient channel system of Calaveras County [Cal.].

Cal. State Mg. Bureau, 12th Rept., pp. 482–492, with two maps and cross sections.

Describes the character and occurrence of the ancient river channels of this region.

548 **Stose** (George W.). A specimen of Ceratiocaris acuminata Hall from the Water Lime of Buffalo, N. Y.

Bost. Soc. Nat. Hist., Proc., vol. xxvi, pp. 369–371.

Gives a description of the specimen.

548*a* **Streeruwitz** (W. H. von). Trans-Pecos, Texas.

Abstract: Am. Nat., vol. xxviii, p. 263.

Noticed in Bibliography and Index for 1892 and 1893.

T.

549 **Tarr** (Ralph S.). The origin of drumlins.

Am. Geol., vol. xiii, pp. 393–407.

Reviews the theories advanced to explain the formation of drumlins. Describes their distribution and discusses the evidences as to their mode of formation. Concludes that they may have been formed by glacial erosion.

550 —— Lake Cayuga a rock basin.

Geol. Soc. Am., Bull., vol. v, pp. 339–356, pl. 14.

Abstracts: Am. Geol., vol. xiii, p. 216 (½ p.); Am. Nat., vol. xxviii, p. 596 (¼ p.).

Describes the physical features of the region and reviews opinions of previous writers. Discusses the bearing of observations made and gives the author's summary. Includes a list of 21 papers on the geology of the Finger Lake region.

551 —— Lake Cayuga a rock basin.

Am. Geol., vol. xiv, pp. 194–195 (correspondence).

Refers to certain comments on a previous paper on the same subject.

551*a* **Tarr** (Ralph S.). The economic geology of the United States.
MacMillan & Co., New York.
Reviews: Jour. of Geol., vol. ii, pp. 226–231, by R. A. F. Penrose, jr.; Am. Geol., vol. xiii, pp. 189–192.

551*b* —— Physical geography of Texas.
Abstract: Am. Nat., vol. xxviii, pp. 50–51 (¾ p.).
Noticed in Bibliography and Index for 1892 and 1893.

552 **Taylor** (F. B.). A reconnoissance of the abandoned shore lines of Green Bay [Michigan and Wisconsin].
Am. Geol., vol. xiii, pp. 316-327, with map.
Describes the character and location of some of the abandoned shore lines of Green Bay.

553 —— A reconnoissance of the abandoned shore lines of the south coast of Lake Superior.
Am. Geol., vol. xiii, pp. 365–383, with map.
Describes the occurrence of the various shore lines, with special reference to the highest shore line, and gives a summary of observations and the author's conclusions.

554 —— The limit of post-Glacial submergence in the highlands east of Georgian Bay [Ontario].
Am. Geol., vol. xiv, pp. 273–289, with map.
Describes the glacial formations of the region and gives a summary and conclusions.

555 —— The ancient strait at Nipissing [Ontario].
Geol. Soc. Am., Bull., vol. v, pp. 620–626, pl. 20.
Abstract: Am. Geol., vol. xiii, pp. 220–221 (¾ p.).
Describes the Nipissing and other higher level beaches and glacial phenomena of the region and gives the author's conclusions.

555*a* **Texas, Geological Survey**. Fourth Annual Report, 1892.
Abstract: Am. Jour. Sci., 3d ser., vol. xlvii, pp. 319-320 (⅛ p.).

556 **Tight** (W. G.). A glacial ice dam and a limit to the ice sheet in central Ohio.
Am. Nat., vol. xxviii, pp. 488–493, pls. 13–15.
Describes the glacial phenomena in the vicinity of the Licking River, in Licking County, Ohio.

557 —— Contribution to the knowledge of the pre-Glacial drainage of Ohio.
Denison Univ., Bull., vol. viii, pp. 35–62.
Abstract: Am. Geol., vol. xiv, pp. 188–189.
Describes the present drainage systems of the Licking, Muskingum, Hocking, Scioto, and Miami rivers in Ohio, and discusses the evidences of the character of the pre-Glacial drainage of the region.

558 **Tilton** (J. E.). Origin of the present drainage system of Warren County [Iowa].
Iowa Acad. Sci., Proc., vol. i, pt. iv, pp. 31–33.
Describes the drainage systems and concludes that they were marked out in pre-Glacial time.

559 **Todd** (James E.). A preliminary report on the geology of South Dakota.

South Dakota Geol. Surv., Bull. No. 1, pp. 1-172, pls. i-v, figs. 1-2.

Describes the topographic and geologic features of the State, discusses the origin and distribution of rocks of Archean age, and describes the lithologic character and distribution of the sedimentary and eruptive rocks, and gives an account of the economic resources. Includes a preliminary geologic map of South Dakota and a table showing the geologic formations occurring in the State.

560 —— Preliminary report of a reconnoissance in northwestern Minnesota in 1892.

Minn. Geol. and Nat. Hist. Surv., 21st Ann. Rept., pp. 68-78.

Describes the route traversed and the glacial phenomena of the region.

560*a* —— Preliminary report of a reconnoissance in northwestern Minnesota during 1893.

Minn. Geol. and Nat. Hist. Surv., 22d Ann. Rept., pp. 90-96.

Describes the character of the country traversed and the glacial deposits.

561 —— Pleistocene problems in Missouri.

Geol. Soc. Am., Bull., vol. v, pp. 531-548.

Abstracts: Am. Geol., vol. xiii, pp. 216-217 (½ p.); Am. Nat., vol. xxviii, p. 1027 (½ p.).

Describes the bowldery drift and loess of the pre-Glacial formations of Missouri, and discusses the subglacial lacustrine and fluviatile hypotheses as to the origin of the Pleistocene formations.

562 **Turner** (Henry W.). Jackson folio. California.

U. S. Geol. Surv., Geologic Atlas of the United States, folio 11.

Describes the relations of land and water, and the dynamic movements affecting the Gold Belt of California in Paleozoic, Mesozoic, and Cenozoic times, and gives a generalized section of the strata. Describes the topography of the Jackson sheet and the character and distribution of the Auriferous slates, igneous rocks, the Tertiary rocks, including the Neocene auriferous gravels, and the Pleistocene beds. Describes the occurrence of the gold-quartz veins, gold-bearing gravels, copper, iron, coal, and building stones. Includes topographic, colored areal geologic, economic geologic, and structure section maps.

563 —— The rocks of the Sierra Nevada.

U. S. Geol. Surv., 14th Ann. Rept., pt. 2, pp. 435-495, pls. xlviii-lix, figs. 49-51.

Describes the several divisions of the Auriferous slate series and the overlying Chico, Tejon, Ione, Neocene, and Pleistocene deposits. Describes the character and occurrence of the intrusive and extrusive igneous rocks.

564 —— Geological notes on the Sierra Nevada.

Am. Geol., vol. xiii, pp. 228-249 and 297-316.

Describes the characteristics of each of the sedimentary formations recognized in the Sierra Nevada, ranging in age from the Silurian to Pleistocene. In the second part the author describes the occurrence and structure of the intrusive and extrusive igneous rocks.

665 **Turner** (Henry W.). Notes on the gold ores of California.
Am. Jour. Sci., 3d ser., vol. xlvii, pp. 467–473.
Describes the veins of the Auriferous slate series, the veins in granite, and the occurrence of gold with albite, barite, calcite, quartz in rhyolite, and cinnabar.

565*a* —— **Lindgren** (W.) and. Placerville folio.• California.
U. S. Geol. Surv., Geologic Atlas of the United States, folio 3.
See Lindgren (W.) and Turner (H. W.), No. 365.

566 —— and **Stanton** (T. W.). Notes on the geology of the Coast ranges of California.
Am. Geol. xiv, pp. 92–98.
Discusses the evidence indicating the conformability of the Chico and Tejon series at New Idria, Cal., and gives a list of fossils from Tejon strata collected in Fresno, Sonomo, Lake, and Yulo counties.

567 **Tuttle** (E. G.). The Sabinas coal field [Mexico].
Eng. and Mg. Jour., vol. lviii, pp. 390–392.
Describes the coal seams and the character of the coal, and gives its chemical analyses. Accompanied by a geologic sketch map and cross sections of the region.

568 **Tyrrell** (J. Burr). Notes on the Pleistocene of the Northwest Territories of Canada, northwest and west of Hudson Bay.
Geol. Mag., dec. iv, vol. i, pp. 394–399.
Abstract: Am. Geol., vol. xiv, pp. 338–340.
Describes the lithologic characters of the Cambrian, pre-Cambrian, and glacial deposits of this region, and presents a map of the Territories.

U.

569 **Udden** (J. A.). Erosion, transportation, and sedimentation performed by the atmosphere.
Jour. of Geol., vol. ii, pp. 318–331.
Abstract: Am. Nat., vol. xxviii, pp. 953–954.
Compares the erosive power of air and water and describes the conditions favorable to the erosion and transportation of the earth's material by wind and the character of the deposits thus formed.

570 **Ulrich** (E. O.). New and little known Lamellibranchiata from the Lower Silurian rocks of Ohio and adjacent States.
Ohio Geol. Surv., vol vii, pp. 627–693.
Describes and figures fossils from the Lower Silurian.

570*a* **United States Geological Survey**. Eleventh Annual Report, 1889–90.
Abstract: Am. Nat., vol. xxviii, p. 336 (½ p.).

570*b* —— Twelfth Annual Report, 1890–91.
Abstract: Am. Geol., vol. xiv, pp. 113–114.

570*c* **United States National Museum**. Report, 1892.
Abstract: Am. Nat., vol. xxviii, pp. 866–867 (½ p.).

571 **Upham** (Warren). Wave-like progress of an epeirogenic uplift.
Jour. of Geol., vol. ii, pp. 383–395.
Discusses the evidences of an epeirogenic movement in the northern two-thirds of North America in late Tertiary and Quaternary times.

572 —— Marine shell fragments in drumlins near Boston [Mass.].
Am. Jour. Sci., 3d ser., vol. xlvii, pp. 238–239 (communicated).
Mentions fossils found in drumlins near Boston and considers them pre-Glacial.

573 —— Diversity of the glacial drift along its boundary.
Am. Jour. Sci., 3d ser., vol. xlvii, pp. 358–365.
Abstract: Am. Geol., vol. xiii, p. 223 (¾ p.).
Describes the early and later drift of the Mississippi Valley, and discusses the oscillations of the boundary of the ice sheet during its general recession.

574 —— British drift theories.
Am. Geol., vol. xiii, pp. 275–279.
Reviews the theories advanced by certain English writers to explain the formation of drift deposits.

575 —— Causes and conditions of glaciation.
Am. Geol., vol. xiv, pp. 12–20.
Reviews the recent literature on the origin and duration of the Glacial period, and remarks on the evidences of great erosion of the Lafayette formation in the United States in early Quaternary time.

576 —— The Niagara gorge as a measure of the post-Glacial period.
Am. Geol., vol. xiv, pp. 62–64 (correspondence).
Reviews the evidences indicating the extent of the glacial Lakes Warren and Algonquin and their bearing on the probable volume of the Niagara River.

577 —— The Madison type of drumlins.
Am. Geol., vol. xiv, pp. 69–83, with map, pl. iii, figs. 4–7.
Abstract: Am. Geol., vol. xiii, pp. 222–223 (9 l.).
Describes drumlins with nucleal stratified sand in Massachusetts, and gives a more detailed description of similar drumlins in the vicinity of Madson, Wis.

578 —— Tertiary and early Quaternary baseleveling in Minnesota, Manitoba, and northwestward.
Am. Geol., vol. xiv, pp. 235–246.
Abstracts: Jour. of Geol., vol. ii, p. 754 (½ p.); Am. Geol., vol. xiv, p. 199 (⅛ p.)
Describes the Tertiary and Quaternary baseleveling and the resultant topographic forms in this region. Discusses the evidence of the direction of the drainage during this period and the relationship of the later baseleveling to the Ice age.

579 —— Evidence of superglacial eskers in Illinois and northward.
Am. Geol., vol. xiv, pp. 403–405 (correspondence).
Discusses certain glacial phenomena in Illinois and Minnesota.

580 **Upham** (Warren). Quaternary time divisible into three periods—the Lafayette, Glacial, and Recent.

Am. Nat., vol. xxviii, pp. 979–988.

Abstract: Am. Geol., vol. xiv, p. 203 (⅓ p.).

Reviews the previous opinions on the duration of the geologic subdivisions mentioned and discusses the classification proposed.

581 —— Preliminary report of field work during 1893 in northeastern Minnesota, chiefly relating to the glacial drift.

Minn. Geol. and Nat. Hist. Surv., 22d Ann. Rept., pp. 18–66.

Describes the topography and the Archean outcrops of the region. Discusses the evidences of Cretaceous beds underlying the drift, and describes the glacial deposits.

582 —— The origin of drumlins.

Bost. Soc. Nat. Hist., Proc., vol. xxvi, pp. 2–17.

Abstract: Am. Nat., vol. xxviii, p. 596 (⅓ p.).

Describes the various forms of drumlins and their areal distribution and reviews the previous theories as to their origin. Considers them accumulations from englacial drift. Compares them with moraines, kames, and eskers.

583 —— Deflected glacial striæ in Somerville [Mass.].

Bost. Soc. Nat. Hist., Proc.. vol. xxvi, pp. 33–42.

Describes the occurrence of glacial striæ and gives their observed courses at different points in the vicinity of Somerville, Mass.

584 —— The fishing banks between Cape Cod and Newfoundland.

Bost. Soc. Nat. Hist., Proc., vol. xxvi, pp. 42–48; Am. Jour. Sci., 3d ser., vol. xlvii, pp. 123–129.

Abstract: Am. Geol., vol. xii, pp. 190–191 (⅓ p.).

Describes the fishing banks of this region and discusses the evidences of a long-continued uplift at the close of the Tertiary period.

585 —— [Extra-morainic drift of the Delaware Valley.]

Geol. Soc. Am., Bull., vol. v, pp. 16–17 (½ p.).

In discussion of papers by A. A. Wright and E. H. Williams, jr., on the glaciated regions of New Jersey and Pennsylvania.

586 —— [Terrestrial submergence southeast of the American Continent.]

Geol. Soc. Am., Bull., vol. v, p. 22 (¼ p.).

In discussion of paper by J. W. Spencer on the same subject.

587 —— Evidences of the derivation of the kames, eskers, and moraines of the North American ice sheet, chiefly from its englacial drift.

Geol. Soc. Am., Bull., vol. v, pp. 71–86.

Abstract: Am. Geol., vol. xii, p. 169 (¾ p.).

Describes glacial phenomena of Long Island, near Rochester, and in portions of North Dakota and Manitoba, which are considered typical examples of the transportation and deposition of the materials of kames, eskers, and moraines.

588 **Upham** (Warren). The succession of Pleistocene formations in the Mississippi and Nelson River basins.

Geol. Soc. Am., Bull., vol. v, pp. 87-100.

Abstract: Am. Geol., vol. xii, pp. 170–171 (⅜ p.).

Describes the Lafayette formation, the glacial drift and marginal moraines, and the loess and other modified drift deposits of the Mississippi Valley and Lake Agassiz and its deltas. Discusses the evidences of elevation prior and subsequent to the Glacial epoch.

589 —— Pleistocene climatic changes.

Geol. Mag., dec. iv, vol. i, pp. 340–349.

Abstract: Am. Nat., vol. xxviii, p. 886 (⅛ p.).

Reviews the history of the Glacial period in North America and discusses the causes of the climatic changes.

589*a* —— Tertiary and Quaternary stream erosion of North America.

Abstracts: Am. Assoc. Adv. Sci., Proc., vol. xlii, pp. 181-183; Am. Geol., vol. xii, pp. 180–181 (⅛ p.).

V.

590 **Van Hise** (Charles R.). Summary of current pre-Cambrian North American literature.

Jour. of Geol., vol. ii, pp. 109–118 and 444–454.

Reviews recent papers on the pre-Cambrian strata of North America.

591 —— The pre-Cambrian rocks of North America.

Int. Cong. Geol., Compte Rendu, 5th session, pp. 110–150.

This paper is condensed from the final chapter of Bulletin No. 86 of the U. S. Geologic Survey, Correlation Papers, Archean and Algonkian, and noticed in Bibliography and Index for 1892 and 1893.

592 —— [Correlation of clastic rocks.]

Int. Cong. Geol., Compte Rendu, 5th session, pp. 167, 172, and 173.

Remarks on the methods employed in the correlation of pre-Cambrian rocks.

593 —— Excursion to Lake Superior: pre-Cambrian geology of the Lake Superior region.

Int. Cong. Geol., Compte Rendu, 5th session, pp. 489–512.

Describes the relations of the Basement Complex, Lower Huronian, Upper Huronian, and Cambrian in this region, and gives the author's general conclusions. Gives a list of 27 papers referring to the geology of the Lake Superior region.

594 —— The succession in the Marquette iron district of Michigan.

Abstract: Geol. Soc. Am., Bull., vol. v, pp. 5–6.

Describes the stratigraphic relations of the formations of the region.

595 —— Character of folds in the Marquette iron district.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xlii, p. 171 (⅛ p.).

The folding is described as resembling the fan structure of the Alps, except that it is a synclinorium rather than an anticlinorium.

595*a* —— Correlation papers: Archean and Algonkian.

Abstract: Am. Nat., vol. xxviii, p. 944 (⅜ p.).

Noticed in Bibliography and Index for 1892 and 1893.

596 **Vermeule** (Cornelius Clarkson). Report on water supply, water power, the flow of streams, and attendant phenomena.

N. J. Geol. Surv., vol. iii, Final Report, pp. 1-352, appendixes i and ii, pp. 1-62.

Gives data concerning the amount of rainfall, evaporation, and stream gaugings of the drainage systems of New Jersey, and describes the process of stream pollution.

597 —— Water supply and water power.

N. J. Geol. Surv., Rept., 1893, pp. 373-385, with map.

Describes the pollution of the Passaic and other rivers of New Jersey, and gives the location and capacity of certain localities to furnish water supply in the future.

W.

598 **Wadsworth** (M. E.). A sketch of the geology of the iron, gold, and copper districts [Michigan].

Michigan, Rept. of the State Board of Geol. Surv., 1891 and 1892, pp. 79-174.

Describes the general succession of the formations in Michigan, the lithologic character of the rocks associated with the iron ore bodies, and those of the gold and copper deposits.

599 **Wahnschaffe** (Felix). [Classification of Pleistocene deposits.]

Int. Cong. Geol., Compte Rendu, 5th session, pp. 195 and 196-197.

Considers a chronologic classification possible for the Pleistocene deposits of North Germany.

600 **Walcott** (Charles Doolittle). Notes on the Cambrian rocks of Pennsylvania, from the Susquehanna to the Delaware.

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 37-41.

Abstract: Am. Nat., vol. xxviii, pp. 950-951.

Describes the lithologic and paleontologic characteristics of the Cambrian beds of Lancaster County and of the northern belt of limestone in Pennsylvania and New Jersey. Concludes that the basal quartzite is the same from Vermont to Alabama, that the basal sandstone in this belt is of Lower Cambrian age, and that the superjacent limestones of the northern part carry the Olenellus fauna, and in the central and southern part the limestones appear to be represented by shales.

601 —— On the occurrence of Olenellus in the Green Pond Mountain series of northern New Jersey, with a note on the conglomerates.

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 309-311.

Mentions the finding of Olenellus in the limestone in this region, and remarks on the occurrence of a conglomerate both under and overlying the limestone, and on the correlation of the conglomerate of this basin of sedimentation with those of another to the west and north.

602 —— Pre-Cambrian igneous rocks of the Unkar terrane, Grand Canyon of the Colorado, Arizona.

U. S. Geol. Surv., 14th Ann. Rept., pt. 2, pp. 497-519, pls. lx-lxv, figs. 52-53.

Describes the sections of the Chuar and Unkar terranes and of the Chuar lava butte. Discusses the conditions of deposition and age of these beds and their correlation with other Algonkian strata.

603 **Walcott** (Charles Doolittle). [Correlation of clastic rocks.]

Int. Cong. Geol., Compte Rendu, 5th session, pp. 168–170.

Remarks on the author's methods employed in the correlation of the Cambrian rocks of North America.

604 —— Silurian vertebrate life at Canyon City [Colo.].

Int. Cong. Geol., Compte Rendu, 5th session, pp. 427–428.

Gives a brief description of the character of the ichthyic fauna found in Silurian rocks in the vicinity of Canyon City, Colo.

605 —— Itinerary, Niagara Falls to New York City.

Int. Cong. Geol., Compte Rendu, 5th session, pp. 459–463.

Describes the geology along the railroad from Niagara Falls to New York City.

606 —— [Terrestrial submergence southeast of the American Continent.]

Geol. Soc. Am., Bull., vol. v, p. 22 (⅓ p.).

In discussion of paper by J. W. Spencer on the same subject.

607 —— Paleozoic intraformational conglomerates.

Geol. Soc. Am., Bull., vol. v, pp. 191–198, pls. 5–7.

Abstract: Am. Nat., vol. xxviii, p. 1023 (⅓ p.).

Gives a definition of the term intraformational conglomerate and describes localities in Canada, Vermont, New York, Pennsylvania, and Tennessee where they occur, and discusses their origin.

608 —— Geologic time, as indicated by the sedimentary rocks of North America.

Am. Assoc. Adv. Sci., Proc., vol. xlii, pp. 129–169, with map of North America; Smith. Inst., Ann. Rept., 1892–93, pp. 301–334.

Abstract: Am. Nat., vol. xxviii, pp. 793–794.

Describes the growth and geographic conditions of the continent, the mode of formation and distribution of the deposits of the Cordilleran sea. Discusses the duration of Paleozoic time, as indicated by mechanical and chemical sedimentation, and gives an estimate of the duration of the different periods of post-Archean time.

609 —— Note on some appendages of the trilobites.

Geol. Mag., dec. iv, vol. i, pp. 246–251, pl. viii.

Abstracts: Am. Jour. Sci., 3d ser., vol. xlvii, p. 481 (⅓ p.); Am. Nat., vol. xxviii, p. 878 (½ p.).

Refers to the recent discovery of the antennæ of trilobites and compares them with the extremities of certain specimens of Ceraurus, Calymene, and Asaphus.

609*a* —— The North American Continent during Cambrian time.

Abstract: Am. Geol., vol. xiv, pp. 116–117.

Noticed in Bibliography and Index for 1892 and 1893.

610 **Walker** (T. L.). Notes on nickeliferous pyrite from Murray mine, Sudbury, Ontario.

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 312–314.

Describes this mineral and gives its chemical analysis.

611 **Wallace** (Alfred R.). The Ice age and its work.

Pop. Sci. Mo., vol. vliv, pp. 681-689, 781-791, and vol. xlv, pp. 40-50 and 244-258.

Describes glacial phenomena of Europe and North America.

611*a* **Ward** (Lester F.). Principes et méthodes d'étude de corrélation au moyen des plantes fossiles.

Int. Cong. Geol., Compte Rendu, 5th session, pp. 97-109.

Abstract: Am. Geol., vol. xiv, pp. 334-335 (⅔ p.).

Published in English in American Geologist, vol. ix, p. 34, and noticed in Bibliography and Index for 1892 and 1893.

612 —— [Correlation of clastic rocks.]

Int. Cong. Geol., Compte Rendu, 5th session, pp. 167-168.

Gives a brief summary of methods of correlation of rock formations by means of fossil plants.

613 —— The Cretaceous rim of the Black Hills [South Dakota].

Jour. of Geol., vol. ii, pp. 250-266.

Abstract: Am, Nat., vol. xxviii, pp. 794-795 (½ p.).

Describes the occurrence of cycads in Cretaceous strata of the Black Hills and gives the section of the Cretaceous and Jurassic strata, with notes on the fossil plants collected. Discusses the bearing of the facts presented on the Lower Cretaceous of North America.

614 —— Recent discoveries of cycadean trunks in the Potomac formation of Maryland.

Torrey Bot. Club, Bull., vol. xxi, pp. 291-299.

Gives a historical sketch of the discovery of cycadean trunks in the Cretaceous strata of Maryland.

615 **Weed** (Walter Harvey). The formation of hot-spring deposits.

Int. Cong. Geol., Compte Rendu, 5th session, pp. 360-363.

Describes the formation of hot-spring deposits in the Yellowstone National Park.

616 —— Livingston to Snake Plains. Itinerary, Livingston to Bozeman [Mont.].

Int. Cong. Geol., Compte Rendu, 5th session, pp. 364-365.

Describes the geologic structure of this region.

617 —— The Laramie and the overlying Livingston formation in Montana, with report on the flora by F. H. Knowlton.

Abstracts: Am. Jour. Sci., 3d ser., vol. xlvii, pp. 404-405; Am. Geol., vol. xiv, pp. 391-392.

Noticed in Bibliography and Index for 1892 and 1893.

617*a* —— The glaciation of the Yellowstone Valley north of the Park.

Abstract: Am. Geol., vol. xiv, pp. 393-394 (½ p.).

Noticed in Bibliography and Index for 1892 and 1893.

617*b* —— and **Iddings** (J. P.). Yellowstone Valley, from Livingston to Cinnabar.

Int. Cong. Geol., Compte Rendu, 5th session, pp. 326-335.

Describes the geology and structure of the region and its glacial phenomena.

617*c* **Weed** (Walter Harvey) and **Iddings** (J. P.). Livingston folio. Montana.

U. S. Geol. Surv., Geologic Atlas of the United States, folio 1.

See Iddings (J. P.) and Weed (W. H.), No. 307.

618 **Weeks** (Joseph D.). The Potomac and Roaring Creek coal fields in West Virginia.

U. S. Geol. Surv., 14th Ann. Rept., pt. 2, pp. 567–590, pls. lxxiii-lxxiv, figs. 73–75.

Describes the location of the coal basins, gives the sections displayed at various points and chemical analyses of the coals.

618*a* **Wells** (H. L.), **Pirsson** (L. V.) and. On the occurrence of leadhillite in Missouri, and its chemical composition.

Am. Jour. Sci., 3d ser., vol. xlviii, pp. 219–226.

See Pirsson (L. V.) and Wells (H. L.), No. 457.

619 **Westgate** (Lewis G.). The mineralogical character of certain New Jersey limestones.

Am. Geol., vol. xiv, pp. 308–313.

Gives a chemical analysis of the limestone and describes the characters of pyroxene and biotite and the microscopic characters of the two special types of the rock, pyroxene rock and quartz rock.

620 —— The age of the crystalline limestones of Warren County, N. J.

Am. Geol., vol. xiv, pp. 369–379, with map.

Describes the petrographic characters of these limestones and their relationship with other crystalline limestones of the State, and reviews the opinions of other writers as to their age. Describes the relations of the limestones with the gneisses and eruptive rocks, and concludes that the limestones of this region are older than the blue magnesian limestone of Cambrian age.

621 **Weston** (T. C.). Notes on the "Quebec group."

Ottawa Nat., vol. viii, pp. 81–82.

Describes an exposure of these beds near Quebec.

622 —— Notes on the Miocene Tertiary rocks of the Cypress Hills, Northwest Territory, Canada.

Nova Scotian Inst. Sci., Proc. and Trans., 2d ser., vol. i, pp. 223–227.

Gives a section of the Miocene beds in this region and notes on the fossils found in them.

623 **Wheeler** (H. A.). The calculation of the fusibility of clays.

Eng. and Mg. Jour., vol. lvii, pp. 224–225 and 244.

Gives in tabular form the chemical analyses and fusibility of clays from different parts of Missouri, and discusses the results obtained.

624 **White** (Charles A.). The relation of biology to geological investigation.

U. S. Nat. Mus., Ann. Rept., 1892, pp. 245–368.

Describes the character and limitations of sedimentary formations and discusses the character, origin, and relation of fossil remains to structural geology, the chronological value of fossils, and the criteria of past aqueous conditions.

624*a* **White** (David). Flora of the outlying Carboniferous basins of southwestern Missouri.

Abstract: Am. Geol., vol. xiii, pp. 283–284 (¼ p.).

Noticed in Bibliography and Index for 1892 and 1893.

625 **White** (Israel C.). From Cumberland, Md., to the Ohio River.

Int. Cong. Geol., Compte Rendu, 5th session, pp. 279–288.

Describes the outcrops of the Devonian and Caboniferous rocks and the structure of the Appalachians in this region.

625*a* —— [Past drainage systems of the Upper Ohio basin.]

Abstract: Am. Geol., vol. xiii, p. 219 (½ p.).

626 **White** (Theodore Greely). The geology of Essex and Willsboro townships, Essex County, N. Y.

N. Y. Acad. Sci., Trans., vol. xiii, pp. 214–233, pls. vi–vii.

Describes the geology of the region, including strata of Archean, Cambrian, Silurian, and Pleistocene age. Includes a record of dikes and list of fossils collected.

626*a* **Whiteaves** (J. F.). The Cretaceous system of Canada.

Abstracts: Am. Geol.. vol. xiii, p. 193 (9 l.); Am. Nat., vol. xxviii, p. 161 (¾ p.).

Noticed in Bibliography and Index for 1892 and 1893.

626*b* —— Note on the recent discovery of large unio-like shells in the Coal Measures of South Joggins, Nova Scotia.

Abstracts: Am. Geol., vol. xiii, p. 193 (7 l.); Can. Rec. Sci., vol. vi, pp. 59–60 (½ p.).

Noticed in Bibliography and Index for 1892 and 1893.

627 **Whitfield** (Robert Parr). On new forms of marine algæ from the Trenton limestone, with observations on Buthograptus laxus Hall.

Am. Mus. Nat. Hist., Bull., vol. vi, pp. 351–358, pl. xi.

Considers that certain fossils that have been described as graptolites are true marine algæ. Describes three new genera and species.

628 —— Mollusca and Crustacea of the Miocene formations of New Jersey.

U. S. Geol. Surv., Mon. xxiv, 195 pp., pls. i–xxiv.

Reviews previous descriptions of fossils from these beds. Gives a list of the genera and species found and describes many of them.

629 —— Contributions to the paleontology of Ohio.

Ohio Geol. Surv., vol. vii, pp. 407–494.

Describes fossils from the Paleozoic rocks of Ohio.

629*a* —— Republication of descriptions of Lower Carboniferous Crinoidea from the Hall collection in the American Museum of Natural History, with illustrations of the original type specimens not heretofore figured.

Review: Am. Geol., vol. xiii, p. 124–125.

630 **Whittle** (Charles Livy). The occurrence of Algonkian rocks in Vermont and the evidence for their subdivision.

Jour. of Geol., vol. ii, pp. 396–429.

Describes the topographic and geologic features of the Green Mountains, and the lithologic and structural differences in the different divisions of the Algonkian series.

631 —— The general structure of the main axis of the Green Mountains [Vermont].

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 347–355.

Describes the rocks which underlie the Olenellus horizon in this region, which are referred to the Algonkian, and the orographic disturbances which they have suffered, and discusses the character of the folding of the Green Mountains.

632 **Williams** (E. H., jr.). South Mountain glaciation [Pennsylvania].

Geol. Soc. Am., Bull., vol. v, pp. 13–15.

Describes glacial phenomena of this region which form a fringe of the great terminal moraine in Pennsylvania.

633 —— Extra-morainic drift between the Delaware and the Schuylkill [Pennsylvania].

Geol. Soc. Am., Bull., vol. v., pp. 281–296, pls. 9–11.

Abstract: Am. Geol., vol. xiii, p. 221 (½ p.).

Describes the topographic features, drainage systems, and the glacial deposits and underlying rocks of the region.

634 —— The age of the extra-morainic fringe in eastern Pennsylvania.

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 34–37.

Describes the glacial deposits in the vicinity of Bethlehem, Pa., and concludes that they are of recent formation, and that the Ice age was of short duration.

635 **Williams** (George Huntington). The Appalachian region.

Int. Cong. Geol., Compte Rendu, 5th session, pp. 268–273.

Describes the geologic formations of the Appalachian region, with special reference to the portion crossed by the Rocky Mountain excursion of the International Congress of Geologists.

636 —— Washington, D. C., to Cumberland, Md. Itinerary.

Int. Cong. Geol., Compte Rendu, 5th session, pp. 274–279.

Describes the geologic features along the route traversed by the excursion.

637 —— The distribution of ancient volcanic rocks along the eastern border of North America.

Jour. of Geol., vol. ii, p. 1–31.

Abstracts: Am. Jour. Sci., 3d ser., vol. xlvii, pp. 140–141; Am. Geol., vol. xiii, pp. 212–213 (½ p.).

Reviews the opinions of various writers on the nature of ancient volcanic rocks and describes the distribution of the volcanic areas of eastern North America and gives the author's general conclusions.

637*a* **Williams** (George Huntington). Piedmontite from a new locality.

Abstract: Am. Nat., vol. xxviii, pp. 517–518 (⅜ p.).

Noticed in Bibliography and Index for 1892 and 1893.

638 —— and **Clark** (W. B.). Outline of the geology and physical features of Maryland.

Johns Hopkins Univ. Press, Baltimore, Md., 1893.

Abstract: Am. Jour. Sci., 3d ser., vol. xlvii, p. 320 (¼ p.).

This is a reprint of chapters relating to physical geography and geology from the work entitled "Maryland and its Resources," prepared by members of the Johns Hopkins University faculty for the World's Columbian Exposition.

638*a* —— **McGee** (W J), **Willis** (B.) and **Darton** (N. H.). Geology of Washington and vicinity.

Int. Cong. Geol., Compte Rendu, 5th session, pp. 219–251.

See McGee (W J), Willis (B.), Darton (N. H.), and Williams (G. H.), No. 385.

639 **Williams** (Henry Slater). On the age of the manganese beds of the Batesville region of Arkansas.

Am. Jour. Sci., 3d ser., vol. xlviii, pp. 325–331.

Reviews the discussion as to the origin and age of these beds by R. A. F. Penrose, and discusses the paleontologic evidence which indicates that the manganese occurs at a distinct horizon between two limestones—the lower one containing Ordovician species which have been found in rocks called Upper Silurian, and the upper limestone carrying an Upper Silurian fauna which has been reported from Lower Silurian horizons.

640 —— [Correlation of clastic rocks.]

Int. Cong. Geol., Compte Rendu, 5th session, pp. 170–171.

Remarks on the importance of considering the relation of organisms to conditions of environment.

641 —— Dual nomenclature in geological classification.

Jour. of Geol., vol. ii, pp. 145–160.

Abstracts: Am. Jour. Sci., 3d ser., vol. xlvii, pp. 143–145; Am. Geol., vol. xiii, pp. 139–140.

Discusses the value of the time scale and formation scale in geologic classification.

641*a* **Willis** (Bailey). Relations of synclines of deposition to ancient shore lines.

Abstract: Am. Geol., vol. xiii, pp. 140–141.

641*b* —— **McGee** (W J), **Williams** (G. H.), and **Darton** (N. H.). Geology of Washington and vicinity.

Int. Cong. Geol., Compte Rendu, 5th session, pp. 219–251.

See McGee (W J), Williams (G. H.), Willis (B.) and Darton (N. H.), No. 385.

642 **Williston** (S. W.). Kansas pterodactyls.

Kans. Univ. Quart., vol. 1, pp. 1–13, pl. 1, and vol. ii, pp. 79–80.

Gives a list of Pteranodon species hitherto named, and describes some of their characters and those of Nyctodactylus.

643 **Williston** (S. W.). Kansas mosasaurs.

Kans. Univ. Quart., vol. ii, pp. 83–84, pl. iii.

Gives a restoration of Clidastes.

644 —— Restoration of Aceratherium fossiger Cope.

Kans. Univ. Quart., vol. ii, pp. 289–290, pl. viii.

Describes the strata in which the remains of the species were found and gives a figure of the restoration.

645 —— On various vertebrate remains from the lowermost Cretaceous of Kansas.

Kans. Univ. Quart., vol. iii, pp. 1–4, pl. i.

Describes the remains of fishes and turtles found in these beds, including one new species, Cimoliosaurus n. sp.

646 —— A new turtle from the Benton Cretaceous.

Kans. Univ. Quart., vol. iii, pp. 5–18, pls. ii–v.

Describes a new genus and species, Desmatochelys lowii, from the Cretaceous of Nebraska.

647 —— Notes on Uintacrinus socialis Grinnell.

Kans. Univ. Quart., vol. iii, pp. 19–20.

Brief note on the discovery of a colony of this crinoid in Cretaceous strata of Kansas.

648 —— Restoration of Platygonus.

Kans. Univ. Quart., vol. iii, pp. 23–39, pls. vii–viii.

Describes the occurrence of the remains found in Pliocene strata of western Kansas and their characteristics.

649 —— and **Case** (E. C.). Kansas mosasaurs.

Kans. Univ. Quart., vol. i, pp. 15–32, pls. ii–vi.

Gives a list of the species found in Kansas, with notes on Clidastes velox and C. westii n. sp.

650 **Winchell** (Horace V.). A bit of iron range history.

Am. Geol., vol. xiii, pp. 164–170.

Reviews some of the literature on the iron mines of the Lake Superior region.

651 —— [The genesis of ore deposits.]

Am. Inst. Mg. Engrs., Trans., vol. xxiii, pp. 591–593.

In discussion of paper on the same subject by F. Posepny.

652 **Winchell** (N. H.). Field observations of N. H. Winchell in 1892.

Minn. Geol. and Nat. Hist. Surv., 21st Ann. Rept., pp. 79–152.

Notes on the structure and stratigraphy of the Mesabi range, on the strata at Republic, Mich., and on the Potsdam sandstone at Potsdam, N. Y. Includes a paper on some problems of the Mesabi iron ore, previously published in the American Geologist.

653 —— A sketch of the geological investigations in Minnesota.

Jour. of Geol., vol. ii, pp. 692–707.

Gives a historical sketch of the work accomplished by the geological surveys of Minnesota.

653*a* **Winchell** (N. H.) and **Schuchert** (C.). Sponges, graptolites, and corals from the Lower Silurian of Minnesota.

Abstract: Am. Geol., vol. xii, p. 331 (½ p.).

Noticed in Bibliography and Index for 1892 and 1893.

654 **Winslow** (Arthur). Geological survey in Missouri.

Jour. of Geol., vol. ii, pp. 207-221.

Gives a historical sketch of the geological surveys of Missouri, describes the work undertaken, and gives a list of the publications.

655 —— [The lead and zinc deposits of the Mississippi Valley.]

Am. Inst., Mg. Engrs., Trans., vol. xxii, pp. 634-636.

In discussion of paper by W. P. Jenney on the same subject.

656 —— [Geological distribution of the useful metals in the United States.]

Am. Inst. Mg. Engrs., Trans., vol. xxii, pp. 735-737.

In discussion of paper by S. F. Emmons on the same subject.

657 —— [The genesis of ore deposits.]

Am. Inst. Mg. Engrs., Trans., vol. xxiii, pp. 588-599.

In discussion of paper on the same subject by F. Posepny.

658 **Wolff** (J. E.). The geology of Hoosac Mountain and adjacent territory [Massachusetts].

U. S. Geol. Surv., Mon. xxiii, pp. 35-108, pls. iv-xi, figs. 9-29.

Describes the topography of the region and the petrographic character of the pre-Cambrian gneiss and the Cambrian (Stockbridge) limestone, and discusses the geologic structure and relations of the formations.

659 —— The geological structure in the vicinity of Hibernia, N. J., and its relation to the ore deposits.

N. J. Geol. Surv., Rept., 1893, pp. 359-369.

Abstract: Am. Geol., vol. xiii, pp. 142-143.

Describes the character of the rocks, the geologic structure, and the probable extension of the iron-ore body.

660 **Woodward** (Anthony). Foraminifera found in the Alabama chalk.

Ala. Geol. Surv., Rept., on the geology of the Coastal Plain of Alabama, p. 289 (½ p.).

Gives a list of Foraminifera, identified by the author, occurring in the Alabama chalk.

661 **Woodward** (Henry). [Mammoth remains of Canada and Alaska.]

Geol. Soc. London, Quart. Jour., vol. l, p. 9 (½ p.).

In discussion of paper by G. M. Dawson, "Notes on the occurrence of mammoth remains in the Yukon districts of Canada and Alaska."

662 **Woodworth** (J. B.). Post-Glacial eolian action in southern New England.

Am. Jour. Sci., 3d ser., vol. xlviii, pp. 63-71.

Abstract: Am. Geol., vol. xiii, p. 122 (8 l.).

Discusses the evidences of the carving of rock surfaces by drifting sand, and describes localities in New England where such phenomena have been observed, the wear on the pebble, and their lithologic character.

663 **Woodworth** (J. B.). Carboniferous fossils in the Norfolk County basin [Massachusetts].

Am. Jour. Sci., 3d ser., vol. xlviii, pp. 145-148.

Describes the occurrence of vegetable remains in sandy partings of a quartzose conglomerate, and gives the section of the Carboniferous rocks found in this region.

664 —— The relation between baselevelling and organic evolution.

Am. Geol., vol. xiv, pp. 209-235.

Abstract: Jour. of Geol., vol. ii, pp. 753-754.

Reviews the various theories concerning land erosion, discusses the effect of river changes on organisms, and their distribution, and the relation of the development of the Jura-Cretaceous peneplain with the development of the contemporaneous fauna and flora, and gives a general summary of the facts presented.

665 —— On traces of a fauna in the Cambridge slates.

Abstract: Bost. Soc. Nat. Hist., Proc , vol. xxvi, pp. 125-126.

Describes trails occurring in these slates in the Boston basin.

666 —— Some typical eskers of southern New England.

Bost. Soc. Nat. Hist., Proc., vol. xxvi, pp. 197-220.

Abstract: Am. Geol., vol. xiv, p. 396 (½ p.).

Gives a list of publications on the eskers of this region. Describes the characteristics and distribution of these eskers and discusses their origin.

667 **Woolman** (Lewis). Artesian wells and water horizons in southern New Jersey, with economical, geological, and paleontological notes.

N. J. Geol. Surv., Rept., 1893, pp. 389-421.

Gives the section displayed by several artesian wells in New Jersey and Delaware, with lists of fossils found.

668 **Wortman** (J. L.). Osteology of Patriofelia, a Middle Eocene creodont.

Am. Mus. Nat. Hist., Bull., vol. vi, pp. 129-164, pl. i.

Abstract: Am. Nat., vol. xxviii, pp. 1027-1028.

Describes Patriofelia and compares it with Oxyæna, Hyænodon, and with seals. Discusses its probable habits and the classification and species.

669 —— On the affinities of Leptarctus primus of Leidy.

Am. Mus. Nat. Hist., Bull., vol. vi, pp. 229-231.

Describes a new specimen.

669*a* —— and **Earle** (Charles). Ancestors of the tapir.

Abstract: Am. Nat., vol. xxviii, p. 416 (½ p.).

Noticed in Bibliography and Index for 1892 and 1893.

669*b* —— **Osborn** (H. F.) and. Fossil mammals of the Lower Miocene White River beds; collection of 1892.

Am. Mus. Nat. Hist., Bull., vol. vi, pp. 192-228, pls. ii-iii.

See Osborn (H. F.) and Wortman (J. L.), No. 433*b*.

670 **Wright** (Albert A.). On the ventral armor of Dinichthys.

Ohio Geol. Surv., vol. vii, pp. 620–626.

Reviews some of the previous descriptions of the ventral armor of Dinichthys.

671 —— The ventral armor of Dinichthys.

Am. Geol., vol. xiv, pp. 313–320, pl. ix, figs. 1–2.

Describes material collected from the Cleveland shale of Ohio.

672 —— Limits of the glaciated area in New Jersey.

Geol. Soc. Am., Bull., vol. v, pp. 7–13.

Abstract: Am. Geol., vol. xii, p. 166 (⅔ p.).

Describes the character of the glacial material, the topography of the region and its influence on glaciation, the determination of the limits of the glaciated area, and the duration and efficiency of glacial ice.

673 **Wright** (G. Frederick). Continuity of the Glacial period.

Am. Jour. Sci., 3d ser., vol. xlvii, pp. 161–187, figs. 1–7.

Abstracts: Am. Geol., vol. xiii, p. 286 (¼ p.); Am. Nat., vol. xxviii, pp. 508–510.

Discusses the evidences as to whether the erosion of the rocky gorge of the Ohio and its tributaries was pre-Glacial or inter-Glacial, illustrated by four maps. Reviews the evidences of pre-Glacial erosion in the Delaware valley, and gives a summary of the events of the Glacial period.

674. —— The Cincinnati ice dam.

Pop. Sci. Mo., vol. xlv, pp. 184–198.

Discusses the evidence which indicates the former existence of an ice dam in the vicinity of Cincinnati.

674*a* —— [Past drainage systems of the Upper Ohio basin.]

Abstract: Am. Geol., vol. xiii, p. 219 (⅙ p.).

674*b* —— Glacial history of western Pennsylvania.

Abstract: Am. Geol., vol. xiii, pp. 219–220 (⅜ p.).

675 **Wurtz** (Henry). The density of the earth.

Sci. Am. Suppl., vol. xxxvii, p. 15028.

Discusses some of the methods used by certain investigators to ascertain the earth's density.

676 —— Gold genesis.

Sci. Am. Suppl., vol. xxxviii, pp. 15644–15645.

Reviews the theories as to the origin of gold.

Z.

677 **Zittel** (K. von). [Correlation of clastic rocks.]

Int. Cong. Geol., Compte Rendu, 5th session, p. 155 (⅛ p.).

Discusses briefly the relative value of plant and animal remains for purposes of correlation.

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    brittsi n. sp., Miller, 413.
    chouteauensis (?) n. sp., Miller, 413.
    fossatus n. sp., Miller, 413.
    sedaliensis n. sp., Miller, 413.
Actinodesma subrecta, Whitfield, 629.

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- *Genera and species described*—Continued.
  - Actinomya kentonensis n. sp., Ulrich, 570.
  - Adelphoceras, Hyatt, 305.
  - Aelurodon meandrinus n. sp., Hatcher, 250.
    - taxoides n. sp., Hatcher, 250.
  - Acmondia ferrissi, Cragin, 102.
  - Aethocystites n. gen., Miller, 413.
    - sculptis n. sp., Miller, 413.
  - Agaricocrinus blairi n. sp., Miller, 413.
    - chouteauensis n. sp., Miller, 413.
    - germanus n. sp., Miller, 413.
    - sampsoni n. sp., Miller, 413.
  - Agelacrinus blairi n. sp., Miller, 413.
    - faberi S. A. Miller, Miller and Faber, 415.
  - Agriochœrus Leidy, Scott, 496.
  - Agriomeryx migrans n. gen. et sp., Marsh, 398.
  - Allonychia ovata n. gen. et sp., Ulrich, 570.
    - subrotunda n. sp., Ulrich, 570.
  - Allopus littoralis n. gen. et sp., Marsh, 394.
  - Allorisma andrewsi, Whitfield, 629.
    - maxvillensis, Whitfield, 629.
  - Ambocœlia Hall, Hall and Clarke, 236.
    - spinosa n. sp., Clarke, 78.
    - spinosa, Hall and Clarke, 235.
  - Ambonychia cincinnatiensis n. sp., Miller and Faber, 414.
  - Amphiclina Laube, Hall and Clarke, 236.
  - Amphiclinodonta Bittner, Hall and Clarke, 236.
  - Amphidesma burnsi n. sp., Whitfield, 628.
  - Amphigenia Hall, Hall and Clarke, 236.
  - Amphispongia oblonga Salt., Rauff, 473.
  - Amphitomella Bittner, Hall and Clarke, 236.
  - Amplexus cinctutus n. sp., Miller, 413.
  - Amycla communis, Whitfield, 628.
  - Anabaia Clarke, Hall and Clarke, 236.
  - Anastrophia Hall, Hall and Clarke, 236.
  - Ancistroceras, Hyatt, 305.
  - Ancodus brachyrhynchus, Scott, 497, 499.
    - rostratus n. sp., Scott, 497.
  - Angelinoceras n. gen., Hyatt, 305.
  - Anguinella Conrad, Whitfield, 628.
    - virginiana, Whitfield, 628.
  - Anisactinella Bittner, Hall and Clarke, 236.
  - Anomaloceras anomalum, Hyatt, 305.
  - Anomalodonta S. A. Miller, Ulrich, 570.
    - alata, Ulrich, 570.
    - plicata n. sp., Ulrich, 570.
  - Anoplotheca Sandberger, Hall and Clarke, 236.
    - (Cœlospira Hall), Hall and Clarke, 236.
    - (Leptocœlia Hall), Hall and Clarke, 236.
  - Anoptera miseneri n. gen. et sp., Ulrich, 570.
  - Anthracopupa ohioensis, Whitfield, 629.
  - Anthracotherium curtum Marsh, Osborn and Wortman, 433*b*.
    - karense n. sp., Osborn and Wortman, 433*b*.
  - Antocha Osten Sacken, Scudder, 502.
    - principialis, Scudder, 502.
  - Aphelops fossiger Cope, Hatcher, 250.
  - Aphetoceras n gen., Hyatt, 305.
    - americanum n. sp., Hyatt, 305.
    - attenuatum, Hyatt, 305.
    - boreale n. sp., Hyatt, 305.
    - farnsworthi, Hyatt, 305.

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- *Genera and species described*—Continued.
  - Aralia nassauensis n. sp., Hollick, 280.
  - Araucarioxylon, Knowlton, 341.
  - Arca (Latiarca?) idonea (?), Whitfield, 628.
    - (Scapharca) callipleura, Whitfield, 628.
    - (Scapharca) lienosa (?), Whitfield, 628.
    - (Striarca) centenaria, Whitfield, 628.
  - Archæoscyphia minganensis (Billings) Hinde, Rauff, 473.
  - Aristozoe canadensis n. sp., Whitfield, 629.
  - Arnioceras nevadanum, Hyatt, 304.
  - Artena Conrad, Whitfield, 628.
  - Astarte cuneiformis, Whitfield, 628.
    - distans, Whitfield, 628.
    - symmetrica, Whitfield, 628.
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  - Astroconia granti Sollas, Rauff, 473.
  - Astylomanon cratera, Rauff, 473.
    - cratera aryballium, Rauff, 473.
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      - lecythium, Rauff, 473.
      - patera, Rauff, 473.
      - poterium, Rauff, 473.
      - promiscum, Rauff, 473.
    - pluriexcavatum n. sp., Rauff, 473.
    - prototypum, Rauff, 473.
    - verrucosum n. sp., Rauff, 473.
    - verrucosum var. ballifera, Rauff, 473.
  - Astylospongia præmorsa var. pusilla (?), Rauff, 473.
  - Astylospongia (?) (Palæomanon?) bursa Hall, Rauff, 473.
  - Athyris McCoy, Hall and Clarke, 236.
    - brittsi n. sp., Miller, 413.
    - densa n. sp., Hall and Clarke, 235.
    - missouriensis n. sp., Miller, 413.
    - ottervillensis n. sp., Miller, 413.
    - subquadrata, Whitfield, 629.
    - subtilita, Whitfield, 629.
    - (Actinoconchus McCoy), Hall and Clarke, 236.
    - (Cliothyris King), Hall and Clarke, 236.
    - (Seminula McCoy), Hall and Clarke, 236.
    - (Spirigerella Waagen), Hall and Clarke, 236.
  - Atrypa Dalman, Hall and Clarke, 236.
    - lati-corrugata n. sp., Foerste, 197.
    - marginalis, Foerste, 197.
    - (Gruenewaldtia) Tschernyschew, Hall and Clarke, 236.
  - Aturia morrissi Michelloti, Hyatt, 305.
    - zizac, Bronn., Hyatt, 305.
  - Atyrpina Hall, Hall and Clarke, 236.
  - Aucella
    - aviculæformis, Hyatt, 304.
    - elongata n. sp., Hyatt, 304.
    - erringtoni, var. arcuata, Hyatt, 304.
    - orbicularis, Hyatt, 304.
  - Auculllæa (Idonearca) terminalis n. var. recedens, Cragin, 102.
  - Aulacorhynchus Dittmar, Hall and Clarke, 236.
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  - lindstrœmi n. sp., Clarke, 74.
- Avicula belviderensis n. sp., Cragin, 102.
  - whitfieldi, Foerste, 197.
- Aviculopecten (?) equilatera, Whitfield, 629.
  - interlineatus, Whitfield, 629.
- Axinea lentiformis (?), Whitfield, 628.
- Bactrites, Clarke, 75.
- Bactrynium Emmrich, Hall and Clarke, 236.
- Balanus proteus, Whitfield, 628.
- Barbatia marylandica, Whitfield, 628.
- Baropus lentus, n. gen. et sp., Marsh, 394.
- Barornis regens, Marsh, 399.
- Barrandella areyi n. sp., Hall and Clarke, 235.
- Barrandellia Hall, Hall and Clarke, 236.
- Barrandeoceras
  - convolvans, Hyatt, 305.
  - elrodi, Hyatt, 305.
  - minganense, Hyatt, 305.
  - natator, Hyatt, 305.
  - sacheri, Hyatt, 305.
  - sternbergi, Hyatt, 305.
  - tyrannum, Hyatt, 505.
- Barycrinus stellifer n. sp., Miller, 413.
- Batocrinus blairi n. sp., Miller 413.
  - brittsi n. sp., Miller, 413.
  - comparilis n. sp., Miller, 313.
  - decrepitus n. sp., Miller, 413.
  - divalis n. sp., Miller, 413.
  - icosidactylus Casseday, Miller, 413.
  - irregularis Casseday, Miller, 413.
- Beecheria Hall, Hall and Clarke, 236.
- Belemnites pacificus, Hyatt, 304.
- Bellerophon
  - alternodosus, Whitfield, 629.
  - cincinnatiensis n. sp., Miller and Faber, 414.
  - globularis n. sp., Miller and Faber, 414.
  - sublævis (?), Whitfield, 029.
  - (Bucania) opertus n. sp., Foerste, 197.
- Beyrichia hammelli n. sp., Miller and Faber, 415.
- Bittnerula n. gen., Hall and Clarke, 236.
- Blairocrinus arrosus n. sp., Miller, 413.
  - bullatus n. sp., Miller, 413.
- Bodmania n. gen., Miller and Faber, 414.
  - insuctum n. sp., Miller and Faber, 414.
- Bos crampianus n. sp., Cope, 97.
  - scaphoceras n. sp., Cope, 97.
- Bouchardia Davidson, Hall and Clarke, 236.
- Brachiospongia digitata, Rauff, 473.
- Brachyphyllum texense n. sp., Fontaine, 200.
- Brontichthys clarki n. gen., Claypole, 83.
- Buccinanops variabilis n. sp., Whitfield, 628.
- Bullinella jacksonensis var. exta, n. var., Harris, 242.
- Busycon carica, Whitfield, 628.
  - scalarispira, Whitfield, 628.
- Byssonychia
  - acutirostris n. sp., Ulrich, 570.
  - alveolata n. sp., Ulrich, 570.
  - byrnesi n. sp., Ulrich, 570.
  - cultrata, Ulrich, 570.
  - grandis n. sp., Ulrich, 570.

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  - obesa n. sp., Ulrich, 570.
  - præcursa n. sp. or var., Ulrich, 570.
  - richmondensis n. sp., Ulrich, 570.
  - suberecta n. sp., Ulrich, 570.
  - vera n. sp., Ulrich, 570.
- Callithamnopsis fruticosa n. gen., Whitfield, 627.
- Calops cristatus n. gen. et sp., Marsh, 396, 398.
- Calymene vogdesi, Foerste, 197.
- Camarophoria King, Hall and Clarke, 236.
  - rhomboidalis n. sp., Hall and Clarke, 235.
  - (Camarophorella Hall), Hall and Clarke, 236.
- Camarospira Hall, Hall and Clarke, 236.
- Camarotoechia Hall, Hall and Clarke, 236.
  - (Liorhynchus Hall), Hall and Clarke, 236.
  - (Plethorhynchus Hall), Hall and Clarke, 236.
- Camerella Billings, Hall and Clarke, 236.
- Camptosaurus dispar, Marsh, 391.
- Cancellaria alternata, Whitfield, 028.
- Canis indianensis Leidy, Cope, 97.
- Cantharus cumberlandianus, Whitfield, 628.
- Capellinia Hall, Hall and Clarke, 236.
- Carcinosoma ingens n. sp., Claypole, 81.
- Cardinia gibbosum (?), Hyatt, 304.
- Cardiocarpus, Jones, 319.
- Cardioceras dubium n. sp., Hyatt, 304.
- Cardita belviderensis n. sp., Cragin, 102.
  - granulata, Whitfield, 628.
- Carditamera aculeata, Whitfield, 628.
  - arata, Whitfield, 628.
- Cardium (?) mudgei n. sp., Cragin, 102.
- Cardium (Cerastoderma) craticuloides, Whitfield, 628.
  - (nemocardium) bisolaris n. sp., Cragin, 102.
- Carpolithus harveyi n. sp., Fontaine, 200.
  - obovatus n. sp., Fontaine, 200.
- Carpomanon
  - glandulosum n. sp., Rauff, 473.
  - stellatum-sulcatum (F. Rom.), Rauff, 473.
    - var. distorta, Rauff, 473.
- Caryomanon
  - inciso-lobatum (F. Rom.), Rauff, 473.
  - roemeri (Hinde), Rauff, 473.
- Caryospongia juglans var. nuxmoschata Hall, Rauff, 473.
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  - aratum, Hyatt, 305.
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  - lineatum, Hyatt, 305.
- Centroceras, Hyatt, 305.
- Centronella Billings, Hall and Clarke, 236.
  - (Oriskania Hall), Hall and Clarke, 236.
  - (Romingerina Hall), Hall and Clarke, 236.
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  serratoides n. sp., Aldrich, 6.
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Chætomorpha (?) prima n. sp., Whitfield, 627.
Chama congregata, Whitfield, 628.
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  scitula, Whitfield, 629.
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  willistoni, Scudder, 502.
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  integra, Scudder, 502.
  maculata, Scudder, 502.
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  subdunata n. sp., Ulrich, 570.
Cimoliosaurus n. sp., Williston, 645.
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Coccosteus cuyahogæ n. sp., Claypole, 84.
  halmodeus (?) n. sp., Clarke, 78.
Cœbothyris Douville, Hall and Clarke, 236.
Cœlodus brownii n. sp., Cope, 95.
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Coleolus clintonensis n. sp., Foerste, 197.
Coloceras globatum, Hyatt, 305.
Colpomya constricta n. sp., Ulrich, 570.
Comphoceras ortoni n. sp., Foerste, 197.
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  georgiæ n. sp., Hall and Clarke, 235.
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  bilineata n. sp., Foerste, 197.
  intertexta n. sp., Miller, 413.
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  concentricus n. sp., Whitfield, 629.
Corbula
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  iodonea, Whitfield, 628.
  subcontracta n. sp., Whitfield, 628.
Cornulites distans, Foerste, 197.
Coroniceras claytoni, Hyatt, 304.
Crania
  albersi n. sp., Miller and Faber, 415.
  blairi n. sp., Miller, 413.
  carbonaria, Whitfield, 629.
  (?) dubia, Foerste, 197.
  greenii n. sp., Miller, 413.
Craniella (?) clintonensis, Foerste, 197.
Cranoceras, Hyatt, 305.
Crassatella melina, Whitfield, 628.
Crepidula fornicata (?), Whitfield, 628.
  plana (?), Whitfield, 628.
Crucibulum costatum, Whitfield, 628.
Cruratula Bittner, Hall and Clarke, 236.

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  (Eunella Hall), Hall and Clarke, 236.
Cryptopora Jeffreys, Hall and Clarke, 236.
Ctenodonta
  cingulata, Ulrich, 570.
  perminuta n. sp., Ulrich, 570.
  retrorsa n. sp., Ulrich, 570.
Cyathocrinus gorbyi n. sp., Miller, 413.
  maxvillensis n. sp., Whitfield, 629.
  somersi, Whitfield, 629.
Cyathophycus quebecensis Dawson, Rauff, 473.
  reticulatus Walcott, Rauff, 473.
Cyclicocrinus n. gen., Miller, 413.
  canaliculatus n. sp., Miller, 413.
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  americanus, Hyatt, 305.
Cyclonconcha mediocardinalis, Ulrich, 570.
  ovata n. sp., Ulrich, 570.
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Cycloporina n. gen., Simpson, 513.
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Cyclospira (?) sparsi-plica n. sp., Foerste, 197.
Cymatoceras
  elegans (?), Hyatt, 305.
  deslonchampsianum, Hyatt, 305.
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  constricta n. sp., Ulrich, 570.
  productifrons n. sp., Ulrich, 570.
  recta n. sp., Ulrich, 570.
  semistriata n. sp., Ulrich, 570.
  typicalis n. sp., Ulrich, 570.
Cyphaspis clintonensis, Foerste, 197.
Cyphocrinus n. gen., Miller, 413.
  gorbyi n. sp., Miller, 413.
Cyphornis magnus n. gen. et sp., Cope, 96.
Cypræa dalli n. sp., Aldrich, 6.
Cypricardinia undulostriata, Foerste, 197.
Cypricardites caswelli, Foerste, 197.
Cyrtia radians n. sp., Hall and Clarke, 235.
Cyrtina Davidson, Hall and Clarke, 236.
  lachrymosa n. sp., Hall and Clarke, 235.
  umbonata, var. alpenensis n. var., Hall and Clarke, 235.
Cyrtoceras clintonensis n. sp., Foerste, 197.
  cretaceum, Whitfield, 629.
  howardi n. sp., Miller, 413.
  thompsoni n. sp., Miller, 413.
  (Glyptoceras) eatonense, Foerste, 197.
  (Glyptoceras) subcompressum, Foerste, 197.
Cystiphyllum greenii n. sp., Miller, 413.
Cyttaromyia, Scudder, 502.
  cancellata, Scudder, 502.
  clathrata, Scudder, 502.
  oligocena, Scudder, 502.
  princetoniana, Scudder, 502.
Dallina Beecher, Hall and Clarke, 236.
Dalmanites werthneri, Foerste, 197.

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- *Genera and species described*—Continued.
  - Daonella bochiformis, n. sp., Hyatt, 304.
    - cardinoides, n. sp., Hyatt, 304.
    - subjecta (?), Hyatt, 304.
  - Davidsonella Munier-Chalmas, Hall and Clarke, 236.
  - Dayia Davidson, Hall and Clarke, 236.
  - Deltoceras n. gen., Hyatt, 305.
    - planum n. sp., Hyatt, 305.
  - Deltodus planidens n. sp., Cope, 95.
  - Dentalium martini, Whitfield, 629.
  - Desmatochelys lowii n. gen. et sp., Williston, 646.
  - Dicamara Hall, Hall and Clarke, 236.
  - Diceratherium. Hatcher, 249.
  - Dicranomyia fontainei, Scudder, 502.
    - fragilis, Scudder, 502.
    - inferna, Scudder, 502.
    - longipes, Scudder, 502.
    - primitiva, Scudder, 502.
    - rostrata, Scudder, 502.
    - stagnorum, Scudder, 502.
    - stigmosa, Scudder, 502.
  - Dictyophytra(?) walcotti n. sp., Rauff, 473.
  - Didymoceras n. gen., Hyatt, 305.
    - nebrascense, Hyatt, 305,
  - Dielasma King, Hall and Clarke, 236.
    - (Cranæna Hall), Hall and Clarke, 236.
  - Dielasmina Waagen, Hall and Clarke, 236.
  - Digonioceras n. gen., Hyatt, 305.
    - rotundum n. sp., Hyatt, 305.
  - Dimerella Zittel, Hall and Clarke, 236.
  - Dinarella Bittner, Hall and Clarke, 236.
  - Dinichthys, Claypole, 84.
  - Dinichthys, Dean, 148.
  - Dinichthys, Wright, 670, 671.
  - Dinobastis serus n. sp., Cope, 97.
  - Dione marylandica, Whitfield, 628.
    - sayana Conrad, Whitfield, 628.
  - Dioonites buchianus var. rarinervis n. var., Fontaine, 200.
    - buchianus Schimper, Fontaine, 200.
    - dunkerianus (Gopp.) Miquel, Fontaine, 200.
  - Dioristella Bittner, Hall and Clarke, 236.
  - Diplospirella Bittner, Hall and Clarke, 236.
  - Diptychoceras, Hyatt, 305.
  - Discina
    - humilis, Whitfield, 629.
    - lodensis, Whitfield, 629.
    - lugubris, Whitfield, 628.
    - meekana, Whitfield, 629.
    - minuta, Whitfield, 629.
  - Discoceras, Hyatt, 305.
    - antiquissimum, Hyatt, 305.
    - graftonense, Hyatt, 305.
  - Disculina(?) Deslongchamps, Hall and Clarke, 236.
  - Distyotites fasciolus n. sp., Penhallow, 451.
    - maximus n. sp., Penhallow, 451.
  - Donax variabilis, Whitfield, 628.
  - Dorycrinus elegans n. sp., Miller, 413.
  - Doscinia acetabulum, Whitfield, 628.
  - Drillia elegans, Whitfield, 628.
    - subflexuosa n. sp., Whitfield, 628.

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- *Genera and species described*—Continued.
  - Dromopus agilis n. gen. et sp., Marsh, 394.
  - Dryosaurus n. gen., Marsh, 395.
  - Dyscolia Fischer and Oehlert, Hall and Clarke, 236.
  - Eatonia Hall, Hall and Clarke, 236.
  - Echinocaris Whitfield, Whitfield, 629.
    - multinodosa, Whitfield, 629.
    - pustulosa, Whitfield, 629.
    - sublevis, Whitfield, 629.
  - Edaphoceras, Hyatt, 305.
  - Eichwaldia Billings, Hall and Clarke, 236.
  - Elasmosaurus intermedius n. sp., Cope, 98.
  - Elomeryx armatus n. gen., Marsh, 397.
  - Elotherium crassum, Marsh, 392.
  - Elpe ulrichi n. sp., Foerste, 197.
  - Embaphias circulosus n. gen. et sp., Cope, 93.
  - Emperoceras beecheri n. gen., Hyatt, 305.
  - Enantiosphen Whidborne, Hall and Clarke, 236.
  - Enclimatoceras (Nautilus) ulrichi White, Harris, 242.
  - Encrinurus punctatus, Foerste, 197.
  - Endolobus avonensis, Hyatt, 305.
  - Eocoryne geminum Matthew, Rauff, 473.
  - Eohyus distans n. sp., Marsh, 398.
    - robustus n. sp., Marsh, 398.
  - Eomeryx pumilus, Marsh, 398.
  - Ephippiocera ferratum Hyatt, Hyatt, 305.
  - Eporeodon major, Osborn and Wortman, 433*b*.
  - Equisetum texense n. sp., Fontaine, 200.
  - Erato emmonsi n. sp., Whitfield, 628.
  - Eretmocrinus prægravis n. sp., Miller, 413.
  - Eridonychia
    - apicalis n. gen. et sp., Ulrich, 570.
    - crenata n. sp., Ulrich, 570.
    - paucicostata n. sp., Ulrich, 570.
  - Estonioceras, Hyatt, 305.
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17. On the Development of Crystallization in the Igneous Rocks of Washoe, Nevada, with Notes on the Geology of the District, by Arnold Hague and Joseph P. Iddings. 1885. 8°. 44 pp. Price 5 cents.

18. On Marine Eocene, Fresh-water Miocene, and Other Fossil Mollusca of Western North America, by Charles A. White. 1885. 8°. 26 pp. 3 pl. Price 5 cents.

19. Notes on the Stratigraphy of California, by George F. Becker. 1885. 8°. 28 pp. Price 5 cents.

20. Contributions to the Mineralogy of the Rocky Mountains, by Whitman Cross and W. F. Hillebrand. 1885. 8°. 114 pp. 1 pl. Price 10 cents.

21. The Lignites of the Great Sioux Reservation: a Report on the Region between the Grand and Moreau Rivers, Dakota, by Bailey Willis. 1885. 8°. 16 pp. 5 pl. Price 5 cents.

22. On New Cretaceous Fossils from California, by Charles A. White. 1885. 8°. 25 pp. 5 pl. Price 5 cents.

23. Observations on the Junction between the Eastern Sandstone and the Keweenaw Series on Keweenaw Point, Lake Superior, by R. D. Irving and T. C. Chamberlin. 1885. 8°. 124 pp. 17 pl. Price 15 cents.

24. List of Marine Mollusca, comprising the Quaternary Fossils and Recent Forms from American Localities between Cape Hatteras and Cape Roque, including the Bermudas, by William Healy Dall. 1885. 8°. 336 pp. Price 25 cents.

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26. Copper Smelting, by Henry M. Howe. 1885. 8°. 107 pp. Price 10 cents.

27. Report of Work done in the Division of Chemistry and Physics, mainly during the Fiscal Year 1884–'85. 1886. 8°. 80 pp. Price 10 cents.

28. The Gabbros and Associated Hornblende Rocks occurring in the Neighborhood of Baltimore, Maryland, by George Huntington Williams. 1886. 8°. 78 pp. 4 pl. Price 10 cents.

29. On the Fresh-water Invertebrates of the North American Jurassic, by Charles A. White. 1886. 8°. 41 pp. 4 pl. Price 5 cents.

30. Second Contribution to the Studies on the Cambrian Faunas of North America, by Charles Doolittle Walcott. 1886. 8°. 369 pp. 33 pl. Price 25 cents.

31. Systematic Review of our Present Knowledge of Fossil Insects, including Myriapods and Arachnids, by Samuel Hubbard Scudder. 1886. 8°. 128 pp. Price 15 cents.

32. Lists and Analyses of the Mineral Springs of the United States (a Preliminary Study), by Albert C. Peale. 1886. 8°. 235 pp. Price 20 cents.

33. Notes on the Geology of Northern California, by J. S. Diller. 1886. 8°. 23 pp. Price 5 cents.

34. On the Relation of the Laramie Molluscan Fauna to that of the Succeeding Fresh-water Eocene and Other Groups, by Charles A. White. 1886. 8°. 54 pp. 5 pl. Price 10 cents.

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45. The Present Condition of Knowledge of the Geology of Texas, by Robert T. Hill. 1887. 8°. 94 pp. Price 10 cents.

46. Nature and Origin of Deposits of Phosphate of Lime, by R. A. F. Penrose, jr., with an Introduction by N. S. Shaler. 1888. 8°. 143 pp. Price 15 cents.

47. Analyses of Waters of the Yellowstone National Park, with an Account of the Methods of Analysis employed, by Frank Austin Gooch and James Edward Whitfield. 1888. 8°. 84 pp. Price 10 cents.

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57. A Geological Reconnaissance in Southwestern Kansas, by Robert Hay. 1890. 8°. 49 pp. 2 pl. Price 5 cents.

58. The Glacial Boundary in Western Pennsylvania, Ohio, Kentucky, Indiana, and Illinois, by George Frederick Wright, with an Introduction by Thomas Chrowder Chamberlin. 1890. 8°. 112 pp. incl. 1 pl. 8 pl. Price 15 cents.

59. The Gabbros and Associated Rocks in Delaware, by Frederick D. Chester. 1890. 8°. 45 pp. 1 pl. Price 10 cents.

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62. The Greenstone Schist Areas of the Menominee and Marquette Regions of Michigan, a Contribution to the Subject of Dynamic Metamorphism in Eruptive Rocks, by George Huntington Williams; with an Introduction by Roland Duer Irving. 1890. 8°. 241 pp. 16 pl. Price 30 cents.

63. A Bibliography of Paleozoic Crustacea from 1698 to 1889, including a List of North American Species and a Systematic Arrangement of Genera, by Anthony W. Vogdes. 1890. 8°. 177 pp. Price 15 cents.

64. A report of Work done in the Division of Chemistry and Physics, mainly during the Fiscal Year 1888-'89. F. W. Clarke, Chief Chemist. 1890. 8°. 60 pp. Price 10 cents

65. Stratigraphy of the Bituminous Coal Field of Pennsylvania, Ohio, and West Virginia, by Israel C. White. 1891. 8°. 212 pp. 11 pl. Price 20 cents.

66. On a Group of Volcanic Rocks from the Tewan Mountains, New Mexico, and on the Occurrence of Primary Quartz in Certain Basalts, by Joseph Paxson Iddings. 1890. 8°. 34 pp. Price 5 cents.

67. The Relations of the Traps of the Newark System in the New Jersey Region, by Nelson Horatio Darton. 1890. 8°. 82 pp. Price 10 cents.

68. Earthquakes in California in 1889, by James Edward Keeler. 1890. 8°. 25 pp. Price 5 cents.

69. A Classed and Annotated Bibliography of Fossil Insects, by Samuel Hubbard Scudder. 1890. 8°. 101 pp. Price 15 cents.

70. Report on Astronomical Work of 1889 and 1890, by Robert Simpson Woodward. 1890. 8°. 79 pp. Price 10 cents.

71. Index to the Known Fossil Insects of the World, including Myriapods and Arachnids, by Samuel Hubbard Scudder. 1891. 8°. 744 pp. Price 50 cents.

72. Altitudes between Lake Superior and the Rocky Mountains, by Warren Upham. 1891. 8°. 229 pp. Price 20 cents.

73. The Viscosity of Solids, by Carl Barus. 1891. 8°. xii, 139 pp. 6 pl. Price 15 cents.

74. The Minerals of North Carolina, by Frederick Augustus Genth. 1891. 8°. 119 pp. Price 15 cents.

75. Record of North American Geology for 1887 to 1889, inclusive, by Nelson Horatio Darton. 1891. 8°. 173 pp. Price 15 cents.

76. A Dictionary of Altitudes in the United States (Second Edition), compiled by Henry Gannett, Chief Topographer. 1891. 8°. 393 pp. Price 25 cents.

77. The Texan Permian and its Mesozoic Types of Fossils, by Charles A. White. 1891. 8°. 51 pp. 4 pl. Price 10 cents.

78. A Report of Work done in the Division of Chemistry and Physics, mainly during the Fiscal year 1889-'90. F. W. Clarke, Chief Chemist. 1891. 8°. 131 pp. Price 15 cents.

79. A Late Volcanic Eruption in Northern California and its Peculiar Lava, by J. S. Diller. 1891. 8°. 33 pp. 17 pl. Price 10 cents.

80. Correlation Papers—Devonian and Carboniferous, by Henry Shaler Williams. 1891. 8°. 279 pp. Price 20 cents.

81. Correlation Papers—Cambrian, by Charles Doolittle Walcott. 1891. 8°. 447 pp. 3 pl. Price 25 cents.

82. Correlation Papers—Cretaceous, by Charles A. White. 1891. 8°. 273 pp. 3 pl. Price 20 cents.

83. Correlation Papers—Eocene, by William Bullock Clark. 1891. 8°. 173 pp. 2 pl. Price 15 cents.

84. Correlation Papers—Neocene, by W. H. Dall and G. D. Harris. 1892. 8°. 349 pp. 3 pl. Price 25 cents.

85. Correlation Papers—The Newark System, by Israel Cook Russell. 1892. 8°. 344 pp. 13 pl. Price 25 cents.

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91. Record of North American Geology for 1890, by Nelson Horatio Darton. 1891. 8°. 88 pp. Price 10 cents.

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96. The Volume Thermodynamics of Liquids, by Carl Barus. 1892. 8°. 100 pp. Price 10 cents.

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100. Bibliography and Index of the Publications of the U. S. Geological Survey, 1879-1892, by Philip Creveling Warman. 1893. 8°. 495 pp. Price 25 cents.

101. Insect Fauna of the Rhode Island Coal Field, by Samuel Hubbard Scudder. 1893. 8°. 27 pp. 2 pl. Price 5 cents.

102. A Catalogue and Bibliography of North American Mesozoic Invertebrata, by Cornelius Breckinridge Boyle. 1893. 8°. 315 pp. Price 25 cents.

103. High Temperature Work in Igneous Fusion and Ebullition, chiefly in Relation to Pressure, by Carl Barus. 1893. 8°. 57 pp. 9 pl. Price 10 cents.

104. Glaciation of the Yellowstone Valley north of the Park, by Walter Harvey Weed. 1893. 8°. 41 pp. 4 pl. Price 5 cents.

105. The Laramie and the Overlying Livingston Formation in Montana, by Walter Harvey Weed, with Report on Flora, by Frank Hall Knowlton. 1893. 8°. 68 pp. 6 pl. Price 10 cents.

106. The Colorado Formation and its Invertebrate Fauna, by T. W. Stanton. 1893. 8°. 288 pp. 45 pl. Price 20 cents.

107. The Trap Dikes of the Lake Champlain Region, by James Furman Kemp and Vernon Freeman Marsters. 1893. 8°. 62 pp. 4 pl. Price 10 cents.

108. A Geological Reconnoissance in Central Washington, by Israel Cook Russell. 1893. 8°. 108 pp. 12 pl. Price 15 cents.

109. The Eruptive and Sedimentary Rocks on Pigeon Point, Minnesota, and their Contact Phenomena, by William Shirley Bayley. 1893. 8°. 121 pp. 16 pl. Price 15 cents.

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115. A Geographic Dictionary of Rhode Island, by Henry Gannett. 1894. 8°. 31 pp. Price 5 cents.

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117. A Geographic Dictionary of Connecticut, by Henry Gannett. 1894. 8°. 67 pp. Price 10 cents.

118. A Geographic Dictionary of New Jersey, by Henry Gannett. 1894. 8°. 131 pp. Price 15 cents.

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124. Revision of North American Fossil Cockroaches, by Samuel Hubbard Scudder. 1895. 8°. 176 pp. 12 pl. Price 15 cents.

125. The Constitution of the Silicates, by Frank Wigglesworth Clarke. 1895. 8°. 109 pp. Price 15 cents.

126. A Mineralogical Lexicon of Franklin, Hampshire, and Hampden Counties, Massachusetts, by Benjamin Kendall Emerson. 1895. 8°. 180 pp. 1 pl. Price 15 cents.

127. Catalogue and Index of Contributions to North American Geology, 1732-1891, by Nelson Horatio Darton. 1896. 8°. 1045 pp. Price 60 cents.

128. The Bear River Formation and its Characteristic Fauna, by Charles A. White. 1895. 8°. 108 pp. 11 pl. Price 15 cents.

129. Earthquakes in California in 1894, by Charles D. Perrine. 1895. 8°. 25 pp. Price 5 cents.

130. Bibliography and Index of North American Geology, Paleontology, Petrology, and Mineralogy for 1892 and 1893, by Fred Boughton Weeks. 1896. 8°. 210 pp. Price 20 cents.

131. Report of Progress of the Division of Hydrography for the Calendar Years 1893 and 1894, by Frederick Haynes Newell, Topographer in Charge. 1895. 8°. 126 pp. Price 15 cents.

132. The Disseminated Lead Ores of Southeastern Missouri, by Arthur Winslow. 1896. 8°. 31 pp. Price 5 cents.

133. Contributions to the Cretaceous Paleontology of the Pacific Coast: The Fauna of the Knoxville Beds, by T. W. Stanton. 1895. 8°. 132 pp. 20 pl. Price 15 cents.

134. The Cambrian Rocks of Pennsylvania, by Charles Doolittle Walcott. 1896. 8°. 43 pp. 15 pl. Price 5 cents.

135. Bibliography and Index of North American Geology, Paleontology, Petrology, and Mineralogy for the Year 1894, by F. B. Weeks. 1896. 8°. 141 pp. Price 15 cents.

136. Volcanic Rocks of South Mountain, Pennsylvania, by Florence Bascom. 1896. 8°. 124 pp. 28 pl. Price 15 cents.

137. The Geology of the Fort Riley Military Reservation and Vicinity, Kansas, by Robert Hay. 1896. 8°. 35 pp. 8 pl. Price 5 cents.

138. Artesian-well Prospects in the Atlantic Coastal Plain Region, by N. H. Darton. 1896. 8°. 228 pp. 19 pl. Price 20 cents.

139. Geology of the Castle Mountain Mining District, Montana, by W. H. Weed and L. V. Pirsson. 1896. 8°. 164 pp. 17 pl. Price 15 cents.

140. Report of Progress of the Division of Hydrography for the Calendar Year 1895, by Frederick Haynes Newell, Hydrographer in Charge. 1896. 8°. 356 pp. Price 25 cents.

141. The Eocene Deposits of the Middle Atlantic Slope in Delaware, Maryland, and Virginia, by William Bullock Clark. 1896. 8°. 167 pp. 40 pl. Price 15 cents.

142. A Brief Contribution to the Geology and Paleontology of Northwestern Louisiana, by T. Wayland Vaughan. 1896. 8°. 65 pp. 4 pl. Price 10 cents.

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145. The Potomac Formation in Virginia, by W. M. Fontaine. 1896. 8°. 149 pp. 2 pl. Price 15 cents.

146. Bibliography and Index of North American Geology, Paleontology, Petrology, and Mineralogy for the Year 1895, by F. B. Weeks. 1896. 8°. 130 pp. Price 15 cents.

STATISTICAL PAPERS.

Mineral Resources of the United States, 1882, by Albert Williams, jr. 1883. 8°. xvii, 813 pp. Price 50 cents.

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Mineral Resources of the United States, 1886, by David T. Day. 1887. 8°. viii, 813 pp. Price 50 cents.

Mineral Resources of the United States, 1887, by David T. Day. 1888. 8°. vii, 832 pp. Price 50 cents.

Mineral Resources of the United States, 1888, by David T. Day. 1890. 8°. vii, 652 pp. Price 50 cents.

Mineral Resources of the United States, 1889 and 1890, by David T. Day. 1892. 8°. viii, 671 pp. Price 50 cents.

Mineral Resources of the United States, 1891, by David T. Day. 1893. 8°. vii, 630 pp. Price 50 cents.

Mineral Resources of the United States, 1892, by David T. Day. 1893. 8°. vii, 850 pp. Price 50 cents.

Mineral Resources of the United States, 1893, by David T. Day. 1894. 8°. viii, 810 pp. Price 50 cents.

On March 2, 1895, the following provision was included in an act of Congress:

"*Provided*, That hereafter the report of the mineral resources of the United States shall be issued as a part of the report of the Director of the Geological Survey."

In compliance with this legislation, the report Mineral Resources of the United States for the Calendar Year 1894 forms Parts III and IV of the Sixteenth Annual Report of the Survey, and Mineral Resources of the United States for the Calendar Year 1895 forms Part III of the Seventeenth Annual Report of the Survey.

The money received from the sale of these publications is deposited in the Treasury, and the Secretary of the Treasury declines to receive bank checks, drafts, or postage stamps; all remittances, therefore, must be by POSTAL NOTE or MONEY ORDER, made payable to the Director of the U. S. Geological Survey, or in CURRENCY, for the exact amount. Correspondence relating to the publications of the Survey should be addressed

To the Director of the
United States Geological Survey,
Washington, D. C.

Washington, D. C., *October, 1896.*

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UNITED STATES

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1896

UNITED STATES GEOLOGICAL SURVEY

CHARLES D. WALCOTT, DIRECTOR

BIBLIOGRAPHY AND INDEX

OF

NORTH AMERICAN GEOLOGY, PALEONTOLOGY, PETROLOGY, AND MINERALOGY

FOR

THE YEAR 1895

BY

FRED BOUGHTON WEEKS

WASHINGTON
GOVERNMENT PRINTING OFFICE
1896

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LETTER OF TRANSMITTAL.

DEPARTMENT OF THE INTERIOR,
UNITED STATES GEOLOGICAL SURVEY,
DIVISION OF GEOLOGY,
Washington, D. C., June 23, 1896.

SIR: I have the honor to transmit herewith the manuscript of a Bibliography and Index of North American Geology, Paleontology, Petrology, and Mineralogy for the year 1895, and to request that it be published as a bulletin of the Survey.

Very respectfully,

F. B WEEKS.

Hon. CHARLES D. WALCOTT,
Director United States Geological Survey.

BIBLIOGRAPHY AND INDEX OF NORTH AMERICAN GEOLOGY, PALEONTOLOGY, PETROLOGY, AND MINERALOGY FOR THE YEAR 1895.

By Fred Boughton Weeks.

INTRODUCTION.

The present work comprises a record of publications on North American geology, paleontology, petrology, and mineralogy for the year 1895. It is planned on the same lines as the previous bulletins (Nos. 130 and 135), excepting that abstracts appearing in regular periodicals have been omitted in this volume.

Bibliography.—The bibliography consists of full titles of separate papers, classified by authors, an abbreviated reference to the publication in which the paper is printed, and a brief summary of the contents, each paper being numbered for index reference. The extent of papers less than a single page in length is indicated as ⅓ p., 5 l. (lines).

Index.—The subject headings, their subdivisions and arrangement, are shown in the Classified Key to the Index. They comprise geographic, geologic, mineralogic, paleontologic, and petrologic subdivisions. Under Economic Geology is given a list of useful minerals and ores described in publications examined; under Mineralogy, a list of minerals described in such publications; under Paleontology, a list of genera and species of fossils therein described, and under Petrology, a list of rocks described, reference being made in each case, by author's name and number of article in the Bibliography, to the paper in which the fossil, mineral, or rock is described.

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5 —— On underground temperatures at great depths.

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8 **Aldrich** (T. H.). Description of two new Eocene Solaridæ from Alabama.

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Names the insects found in the Pleistocene beds of this locality and quotes description of Phyrganea ejecta by S. H. Scudder.

10 —— Notes on a collection of Silurian fossils from Cape George, Antigonish County, Nova Scotia, with descriptions of four new species.

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11 **Andersen** (Carl). The Cooney mining district, Socorro County, New Mexico.

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Describes the ore bodies in this district carrying gold and silver.

12 **Anderson** (F. M.). Some Cretaceous beds of Rogue River Valley, Oregon.

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13 **Ashley** (George H.). Studies in the Neocene of California.

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Describes the general geology and stratigraphy of the Tertiary rocks of the Santa Cruz Mountains and the Pleistocene history of San Francisco Peninsula, as shown by its topography and deposits. Discusses the evidences of the age of the Coast ranges and the recent history of Santa Catalina Island. Includes a sketch map and cross sections of the region.

14 —— The Neocene stratigraphy of the Santa Cruz Mountains of California.

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Describes the topographic features of the mountains and reviews the literature regarding them. Gives a general geologic description of the region, including a columnar section, and the lithologic characters and distribution of the various deposits which form the range. Discusses the evidences as to the geologic age of these beds and gives lists of fossils that have been collected.

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15 **Bache** (Franklin). Coal sections developed by recent operations in Wise County, Virginia.

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Describes the coal developments and gives sections from various parts of the coal area of the county.

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18 **Bain** (Harry Foster). Cretaceous deposits of the Sioux Valley [Iowa].

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Describes the distribution and lithologic characters of the Cretaceous beds of northwestern Iowa and gives the sections exposed at various localities.

19 —— Geology of Keokuk County [Iowa].

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Describes the topography and drainage of the county and the lithologic and stratigraphic features of the Carboniferous and Pleistocene formations. Gives vertical sections of different localities, and describes the occurrence of coal, clay, building stone, water supply, road materials, and mineral paint.

20 —— Geology of Mahaska County [Iowa].

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Describes the physiography and drainage of the region and the stratigraphy and lithology of the rocks of the Carboniferous and Pleistocene formations. Gives typical vertical sections, and discusses the geologic structure. Includes remarks on the occurrence of coal, clay, lime, building stone, soils, water supply, and road materials.

21 —— Central Iowa section of the Mississippian series.

Am. Geol., vol. xv, pp. 317–325.

Abstract: Iowa Acad. Sci., Proc., vol. ii, p. 174.

Describes the lithologic character of the St. Louis, Augusta, and Kinderhook beds, which make up the Mississippian series in central Iowa, and mentions some of the characteristic fossils. Discusses the evidence indicating that a portion of the Kinderhook may possess closer affinities to the Devonian than to the Carboniferous.

22 —— Pre-Glacial elevation of Iowa.

Iowa Acad. Sci., Proc., vol. ii, pp. 23–26.

Discusses the evidences showing that this region, in pre-Glacial time, stood at a considerable elevation above the present.

23 **Bain** (Harry Foster). [Review of the "Preliminary report on the geology of South Dakota," by J. E. Todd].

Jour. of Geol., vol. iii, pp. 114–115.

24 —— Origin of certain features of coal basins.

Jour. of Geol., vol. iii, pp. 646–654.

Describes the character of the basins in which the coal of the Iowa-Missouri region occurs and discusses the origin of these basins.

25 —— Notes on Iowa building stones.

U. S. Geol. Surv., 16th Ann. Rept., pt. iv, pp. 500–503.

Notes on the character and distribution of building stones in Iowa, contained in a paper on "Stone," by William C. Day.

26 —— **Todd** (J. E.) and. Interloessial till near Sioux City, Iowa.

Iowa Acad. Sci., Proc., vol. ii, pp. 20–23, pl. 1.

See Todd (J. E.) and Bain (H. F.), No. 474.

27 **Barbour** (Erwin Hinckley). Is Dæmonelix a burrow? A reply to Dr. Theodor Fuchs.

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28 **Barlow** (Alfred E.). On some dikes containing "huronite."

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29 **Barnard** (H. M.). The zoological position of trilobites.

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Describes the characteristics of Glacial and pre-Glacial erosion of drumlins and discusses the origin of channels on certain drumlins in Massachusetts.

31 **Bather** (F. A.). Brachiocrinus and Herpetocrinus.

Am. Geol., vol. xvi, pp. 213–217.

Discusses the reasons for considering that the fragments described as Brachiocrinus belong to the genus Herpetocrinus.

32 **Bayley** (W. S.). The basic massive rocks of the Lake Superior region, iv. The peripheral phases of the great gabbro mass in northeastern Minnesota.

Jour. of Geol. vol. iii, pp. 1–20.

Describes the olivinitic, hypersthenic, diallagic, biotitic, hornblendic, and nonfeldspathic varieties of the granulitic gabbros. Gives the author's conclusions and a preliminary geologic map of the vicinity of Akeley Lake, Minnesota.

33 **Bayley** (W. S.). Spherulitic volcanics at North Haven, Maine.

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34 —— **Van Hise** (C. R.) and. Preliminary report on the Marquette iron-bearing district of Michigan.

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See Van Hise (C. R) and Bayley (W. S.), No. 503.

35 **Beadle** (H. M.). The Iron Mountain mine [Montana].

Eng. and Mg. Jour., vol. lx, p. 562.

Brief description of the silver-lead ore bodies of this district in Missoula County, Mont.

36 **Becker** (George F.). Gold fields of the southern Appalachians.

U. S. Geol. Surv., 16th Ann. Rept., Part III, pp. 251–331, pls. xvi–xviii.

Describes the geography of the region and gives a history of mining operations and statistics. Describes the characters of the rocks of the gold fields, their geologic structure, the gangue minerals, veins, impregnations, and placers. Includes descriptive notes of the Georgian belt, South Mountain mining district, North Carolina, and the Carolinian belt, and a review of the history of the gold fields of the British maritime provinces and of the Green Mountains. A bibliography of the subject is also given.

37 —— The torsional theory of joints.

Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 130–138 and 865–867.

Describes the phenomena of joints, reviews some of the explanatory hypotheses and the results of the author's experiments, and discusses the torsional theory and the character of torsional rupture.

38 —— Distribution of gold deposits in Alaska.

Jour. of Geol., vol. iii, pp. 960–962.

Gives a brief description of the gold deposits of Alaska.

39 **Beecher** (Charles E.). Further observations on the ventral structure of Triarthrus.

Am. Geol., vol. xv, pp. 91–100.

Describes the ventral structure of Triarthrus as shown by additional characters observed since the publication of the last paper on this trilobite.

40 —— The larval stages of trilobites.

Am. Geol., vol. xvi, pp. 166–197, pls. viii–x.

Describes the characters of the protaspis and gives a review of the larval stages of trilobites and an analysis of the variations of trilobite larvæ. Describes the antiquity of trilobites, the restoration of the protaspis, and the development and characters of the crustacean Nauplius. Gives a summary, list of bibliographic references, and explanation of plates.

41 —— Structure and appendages of Trinucleus.

Am. Jour. Sci., 3d ser., vol. xlix, pp. 307–311, pl. iii.

Mentions the genera allied to Trinucleus and the homologous features in other trilobites. Describes and figures the appendages of Trinucleus concentricus, found associated with Triarthrus becki in the Utica slate near Rome, N. Y.

42 **Beecher** (Charles E.). Revision of the families of loop-bearing Brachiopoda.

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Discusses the classification of the loop-bearing Brachiopoda and gives the author's classification of the genera.

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Describes the physical characteristics, age, and appearance of the eroded rocks on Grand Manitoulin and adjacent islands. Discusses the relations of the erosion forms to rock variety and the causes which have produced this peculiar phenomena.

44 **Berkey** (Charles P.). Notes on Minnesota minerals.

Minn. Geol. and Nat. Hist. Surv., 23d Ann. Rept., pp. 194–202.

Contains notes on minerals from amygdaloidal diabase, with a chemical analysis of the rock, and a description and chemical analysis of apophyllite, laumonite, strigovite, datolite, travertine, and marl.

45 **Blake** (William P.). The zinc deposits of southwestern New Mexico.

Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 187–195.

Gives a brief account of the geology of the region and of the characteristics of the ore bodies.

46 —— Note on the structure of the franklinite and zinc ore bodies of Sussex County, New Jersey.

Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 521–524.

Discusses the geologic structure of the region.

47 —— Alunogen and bauxite of New Mexico.

Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 571–573.

Brief description of a deposit in New Mexico and discussion of the origin of similar bauxites.

48 **Blow** (A. A.). The Leadville gold belt [Colorado].

Abstract: Eng. and Mg. Jour., vol. lix, p. 77, with map.

Gives a brief description of the topography and geology of the region and of the character and occurrence of the gold ores.

49 **Bonney** (T. G.). On the mode of occurrence of Eozoon canadense at Cote St. Pierre [Canada].

Geol. Mag., dec. iv, vol. ii, pp. 292–299.

Describes the limestones in which Eozoon canadense occurs at this locality and the characteristics of the associated gneisses.

50 **Boyd** (C. R.). Correlations in the coal rocks west of Pocahontas, Flat Top, Virginia.

Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 254–257.

Remarks on the occurrence of a conglomerate overlying the coal in this region and its bearing on the correlation of the coals.

51 —— [The torsional theory of joints.]

Am. Inst. Mg. Engrs., Trans., vol. xxiv, p. 866 (½ p.).

In discussion of paper by G. F. Becker on the same subject.

52 **Boyer** (Charles S.). A fossil marine diatomaceous deposit at St. Augustine, Florida.

Torrey Bot. Club, Bull., vol. xxii, pp. 171–174.

Brief notes on diatoms from an artesian well at this place.

53 —— A diatomaceous deposit from an artesian well at Wildwood, N. J.

Torrey Bot. Club, Bull., vol. xxii, pp. 260–266.

Gives a list of diatoms occurring in Miocene strata and describes two new species.

54 **Brewer** (William M.). Ducktown, Tenn., copper mining district.

Eng. and Mg. Jour., vol. lix, p. 271.

Describes the occurrence of copper ores in the southwestern portion of Tennessee.

55 —— The Arbacoochee gold district, Alabama.

Eng. and Mg. Jour., vol. lx, p. 148 (½ p.).

Describes a recent discovery of gold in Cleburne County.

56 —— Mineral resources on the Southern Railway from Atlanta [Georgia] to Birmingham [Alabama].

Eng. and Mg. Jour., vol. lx, pp. 610–611.

Gives a brief description of some of the gold mines of the region.

57 **Brigham** (Albert P.). Drift bowlders between the Mohawk and Susquehanna rivers.

Am. Jour. Sci., 3d ser., vol. xlix, pp. 213–228.

Describes the topographic features of the Oriskany and Chenango valleys and adjacent territory, in central and southern New York, and mentions the sedimentary formations occurring in the district. Describes the distribution of the bowlders derived from the Archean, Oneida, Lower Helderberg, Oriskany, and Corniferous rocks, and gives a summary of the facts concerning the distribution of the bowlders.

58 **Brooks** (W. K.). The origin of the oldest fossils and the discovery of the bottom of the ocean.

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59 **Brown** (Lytle), **Meadows** (T. C.) and. The phosphates of Tennessee.

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See Meadows (T. C.) and Brown (L.) No. 332.

60 **Brown** (R. G.). The ore deposits of Butte City [Mont.].

Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 543–558, figs. 1–3.

Describes the topography of the city and the distribution and character of the several copper and silver belts.

61 **Browne** (Ross E.). California placer gold.

Eng. and Mg. Jour., vol. lix, pp. 101–102.

Describes the character and occurrence of gold placers in California.

62 **Bryson** (John). The ups and downs of Long Island [New York].

Am. Geol., vol. xv, pp. 188–192 (correspondence).

Discusses the evidences which indicate the influence of the ice sheet in the formation of the coast line and the moraines and beaches of Long Island.

63 —— Rock Hill, Long Island, N. Y.

Am. Geol., vol. xvi, pp. 228–233, pl. xii.

Describes the occurrence of bowlders and other glacial phenomena on Long Island.

64 **Buell** (Ira M.). Bowlder trains from the outcrops of the Waterloo quartzite area [Wisconsin].

Wis. Acad. Sci. Arts and Letters, Trans., vol. x, pp. 485–509, pls. xii–xvi.

Describes the geology of the quartzite area, the evidence of glacial distribution, and the character and distribution of the bowlder trains in the region, in southern Wisconsin.

C.

65 **Calvin** (Samuel). Composition and origin of Iowa chalk.

Iowa Geol. Surv., vol. iii, 2d Ann. Rept., pp. 213–236, pl. xix.

Compares the chalk formations of Europe and North America, reviews the literature on the latter deposits, and describes and figures some of the Foraminifera which make up the chalk beds.

66 —— Geology of Allamakee County [Iowa].

Iowa Geol. Surv., vol. iv, 3d Ann. Rept., pp. 39–120, figs. 1–12, and a geologic map.

Describes the physiography and drainage of the region and the stratigraphic and lithologic features of the Cambrian and Lower Silurian formations. Describes the occurrence of building stones, lime, clay, iron, mineral paint, lead, and zinc.

67 —— Maquoketa shales in Delaware County [Iowa].

Abstract: Iowa Acad. Sci., Proc., vol. ii, pp. 40–42.

Describes the character and occurrence of these beds, and gives a list of the fossils collected.

68 —— The Niobrara chalk.

Am. Assoc. Adv. Sci., Proc., vol. xliii, pp. 197–217.

Describes the areal distribution, physical characteristics and stratigraphy of the Niobrara formation. Reviews the literature on the chalky character and Foraminiferal origin of the Niobrara strata. Describes the distribution of the Foraminifera, and compares the Niobrara and English chalk formations.

69 **Case** (E. C.). On the mud and sand dikes of the White River Miocene.

Am. Geol., vol. xv, pp. 248–254.

Reviews the descriptions of dikes of this character in California, Nebraska, and South Dakota, and discusses the evidences which indicate that they occupy preexisting cracks in the associated strata.

70 **Case** (E. C.). Experiments in ice motion.

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Describes and illustrates the experiments undertaken to show the existence of differential movements or currents in the ice bottom, and discusses the relation of the experiments to observed phenomena in ice.

71 **Cazin** (F. M. F.). [The genesis of ore deposits.]

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In discussion of paper by F. Posepny on the same subject.

72 **Chalmers** (Robert). On the glacial lake St. Lawrence of Prof. Warren Upham.

Am. Jour. Sci., 3d ser., vol. xlix, pp. 273-275.

States the author's reasons for considering that there did not exist a glacial lake occupying the St. Lawrence Valley from Quebec to Lake Ontario, and that there are no evidences of a movement of a great ice sheet over this region at any time during the Glacial period.

73 **Chamberlin** (T. C.). Recent glacial studies in Greenland.

Geol. Soc. Am., Bull., vol. vi, pp. 199-220, pls. 3-10.

Abstract: Sci. Am. Suppl., vol. xxxix, p. 15876, and vol. xl, pp. 16275-16276.

Compares the glaciation of the mainland of North America and that of Greenland, and discusses the relation of geologic formations of the region to glaciation. Describes the stratification of the glaciers and gives a discussion of the causes of their movements. Describes eskers, kames, drumlins, and other glacial phenomena of Greenland.

74 —— Notes on the glaciation of Newfoundland.

Abstract: Geol. Soc. Am., Bull., vol. vi, p. 467 (½ p.).

Describes the local character of the glacial phenomena of Newfoundland.

75 —— Glacial studies in Greenland.

Jour. of Geol., vol. iii, pp. 61-69, 198-218, 469-480, 565-582, 668-681, and 833-843.

Describes the topographic and geologic features of the western coast of Greenland, and discusses their bearing on the glacial phenomena. Describes the characteristics of the various glaciers which occupy this portion of Greenland. Includes sketch maps of portions of the region and many illustrations of the glacial phenomena from photographs.

76 —— The classification of American glacial deposits.

Jour. of Geol., vol. iii, pp. 270-277.

Describes the Kansan, Aftonian, Iowa, Toronto, and Wisconsin formations and the later deposits.

77 **Clark** (Ellis). The silver mines of Lake Valley, New Mexico.

Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 138-167.

Describes the occurrence of Silurian and Carboniferous formations in this district and the character and distribution of the associated igneous rocks. Describes the mining operations and gives several cross sections of ore bodies, accompanied by a topographic and geologic map.

78 **Clark** (William Bullock). Cretaceous deposits of the northern half of the Atlantic Coastal Plain.

Geol. Soc. Am., Bull., vol. vi, pp. 479–482.

Describes the character and distribution of the Raritan, Matawan, Navesink, Redbank, Rancocas, and Manasquan divisions of the Cretaceous formation in portions of New Jersey, Delaware, and Maryland.

79 **Clarke** (Frank W.). The constitution of the silicates.

U. S. Geol. Surv., Bull., No. 125, 109 pp.

Discusses the constitution of silicate minerals, with special regard to their structural formulæ.

80 **Clarke** (John M.). "Cephalopod beginnings."

Am. Geol., vol. xv, pp. 125–128 (correspondence).

Discusses the recent reviews of the author's papers on the structure of Orthoceras and that of Bactrites and on the genus Nanno.

81 **Claypole** (E. W.) On a new specimen of Cladodus clarki.

Am. Geol., vol. xv, pp. 1–7.

Describes and figures a specimen of Cladodus clarki from the Cleveland shale of Ohio.

82 —— Recent contributions to our knowledge of the cladodont sharks.

Am. Geol., vol. xv, pp. 363–368.

Reviews the descriptions of the cladodont sharks from material found in Carboniferous rocks, and describes some of their characteristics from more perfect material from the Cleveland shale of Ohio.

83 —— Actinophorus clarki Newberry.

Am. Geol., vol. xvi, pp. 20–25, pl. ii.

Describes additional features of this species from material found in the Cleveland shale of Ohio.

84 —— The cladodonts of the Upper Devonian of Ohio.

Brit. Assoc. Adv. Sci., Rept. for 1895, p. 694 (½ p.).

Gives a brief discussion of the characters of cladodonts.

85 —— The great Devonian placoderms of Ohio, with specimens.

Brit. Assoc. Adv. Sci., Rept. for 1895, p. 695 (½ p.).

Gives brief notes on certain fossil fishes from the Devonian rocks of Ohio.

86 **Clements** (J. Morgan). The volcanics of the Michigamme district of Michigan (preliminary).

Jour. of Geol., vol, iii, pp. 801–822.

Reviews the previous work done in this district and describes the succession of the formations and the petrographic characters of apoandesite, the tuffs and breccias, and the acid volcanics. Discusses the nomenclature of certain rock types. Includes a preliminary map of a part of the district.

87 **Clerc** (F. L.). [The lead and zinc deposits of Missouri.]

Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 931–932.

Makes a correction of certain statements made by A. Winslow, in a paper on the same subject.

88 **Coleman** (A. P.). Glacial and inter-Glacial deposits near Toronto [Ontario]. .

Jour. of Geol., vol. iii, pp. 622–645.

Describes the glacial deposits of the region and gives lists of the species of the fauna and flora collected. Discusses the probable character of the climate and the bearing of the data on the theory of distinct ice ages separated by mild inter-Glacial times.

89 **Collie** (George L.). The geology of Conanicut Island, Rhode Island.

Wis. Acad. Sci. Arts and Letters, Trans., vol. x, pp. 199–230, pl. iv.

Describes the occurrence of slate, granite, arkose, schist, and dike rocks and their microscopic characters.

90 **Comstock** (Theodore B.). Notes on Arizona geology.

Eng. and Mg. Jour., vol. lx, p. 369.

Comprises general remarks on the geology of Arizona.

91 **Cooper** (J. G.) Catalogue of California fossils (Parts ii–v).

Cal. State Mg. Bureau, Bull. No. 4, 1894, pp. 65, pls. i–v.

Part II is a bibliography of fossil Mollusca of California. Part III contains a list of described species of Tertiary and Quaternary Mollusca found in the State since 1888. Part IV gives notes on Cretaceous and Tertiary fossils from Orange County. Part V contains descriptions and figures of new Cretaceous and Tertiary species from California.

92 **Cope** (E. D.). Fourth contribution to the marine fauna of the Miocene period of the United States.

Am. Phil. Soc., Proc., vol. xxxiv, pp. 135–155, pl. vi.

Describes a number of new species found in Miocene strata of the Atlantic coastal plain.

93 —— The reptilian order Cotylosauria.

Am. Phil. Soc., Proc., vol. xxxiv, pp. 436–457, pls. vii–ix.

Describes the characters of this order and gives a list of the genera comprising its four families. Describes a number of new species, mainly from the Permian of Texas.

94 —— On some Pleistocene Mammalia from Petite Anse, La.

Am. Phil. Soc., Proc., vol. xxxiv, pp. 458–468, pls. x–xii.

Describes new species of Myolodon and Equus.

95 —— The fossil Vertebrata from the fissure at Port Kennedy, Pa.

Phila. Acad. Nat. Sci., Proc. 1895, pp. 446–450.

Describes the general character of the vertebrate remains found in this cave and the characters of two new species.

96 **Corning** (Frederick G.). An Idaho silver-gold camp.

Eng. and Mg. Jour., vol. lx, p. 244.

Gives a brief account of the ore bodies in the Florida Mountain district, Idaho.

97 **Cragin** (F. W.). A new Cretaceous genus of Clypeastridæ.

Am. Geol., vol. xv, pp. 90–91.

Describes Scutellaster cretaceus n. gen. et sp., from the Fox Hills division of the Cretaceous, near Colorado Springs, Colo.

98 **Cragin** (F. W.). The Mentor beds: A central Kansas terrane of the Comanche series.

Am. Geol., vol. xvi, pp. 162–165.

Describes the lithologic character of these beds in Saline County, Kans., and gives a list of the fossils collected.

99 —— A study of the Belvidere beds [Kansas].

Am. Geol., vol. xvi, pp. 357–385.

Discusses the use of the term Belvidere. Describes the lithologic and faunal characters of the different subdivisions of the Belvidere beds and reviews the classification of the Comanche terranes.

100 **Crosby** (William O.). Geology of the Boston Basin. Part II. Hingham [Mass.].

Bost. Soc. Nat. Hist., Occasional papers IV, vol. i, part ii, 1894, pp. 179–288, pls. vii–ix.

Describes the topography, character, and distribution of the granite and sedimentary rocks. Gives a detailed account of the geology of Hingham and discusses the geologic age of the formations. Describes the glacial geology. The paper contains three colored geologic maps.

101 —— A classification of economical geological deposits.

Eng. and Mg. Jour., vol. lix, pp. 28–29.

Reviews criticisms of R. W. Raymond on a former paper on the same subject.

102 **Cross** (Whitman). Geology and mining industries of the Cripple Creek district, Colorado. Part I. General geology of the Cripple Creek district, Colorado.

U. S. Geol. Surv., 16th Ann. Rept., part ii, pp. 13–109, pls. i–ii, fig. 1.

Chapter I (introduction) describes the geographic position and geologic character of the district, and its recent physiographic changes.

Chapter II.—Rock formations. Describes the petrographic characters of granite, schist, diabase, phonolite, nepheline-syenite, augite-syenite-porphyry, andesite, tuff, breccia, rhyolite, and the High Park lake beds.

Chapter III.—The Cripple Creek volcano. Describes the constitution and distribution of the fragmental materials and the character of the volcanic phenomena.

Chapters IV and V.—Comprise a description of the distribution of the volcanic rocks in the central area and its outlying districts.

103 **Culver** (G. E.). Some New Jersey eskers.

Wis. Acad. Sci., Arts and Letters, Trans., vol. x, pp. 19–23.

Describes the occurrence of eskers at Ramapo, in northeastern New Jersey.

104 —— The erosive action of ice.

Wis. Acad. Sci., Arts and Letters, Trans., vol. x, pp. 339–366.

Quotes the opinions of a large number of writers on glacial erosion, citing the publications, and giving the author's conclusions.

105 **Cummins** (W. F.). A question of priority.

Am. Geol., vol. xv, pp. 395–396 (correspondence).

Discusses the question of priority in the use of the term "Goodnight" to distinguish certain beds between the Loup Fork and Blanco, in Texas, and the term "Palo Duro," employed by W. B. Scott and in Dana's Manual of Geology.

106 **Cushing** (Henry P.). Faults of Chazy Township, Clinton County, New York.

Geol. Soc. Am., Bull., vol. vi, pp. 285–296, pl. 12.

Describes the general features of the district and of the Cambrian and Silurian formations. Describes the three classes of faults, and discusses the cause of the nonappearance of the Calciferous at Chazy village. The paper is accompanied by a geologic map of Chazy Township.

D.

107 **Dall** (William H.). Monograph of the genus Gnathodon Gray (Rangia Desmoulins).

U. S. Nat. Mus., Proc., vol. xvii, pp. 89–106, pl. vii.

Describes the characters and distribution of the genus Gnathodon, and also the characters of a number of living and fossil species.

108 —— Note on the Atlantic Miocene.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xliii, pp. 224–225 (½ p.).

109 **Darton** (Nelson Horatio). Artesian well prospects in eastern Virginia, Maryland, and Delaware.

Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 372–397, pls. i–ii.

Presents a map showing the distribution of artesian wells, and also four cross sections of the region. Describes the character and distribution of the Pleistocene, Tertiary, and Cretaceous strata, and discusses the conditions affecting subterranean waters. Gives the records of many well borings in the region.

110 —— and **Kemp** (J. F.). A newly discovered dike at Dewitt, near Syracuse, New York. Geological notes by N. H. Darton. Petrographic description by J. F. Kemp.

Am. Jour. Sci., 3d ser., vol. xlix, pp. 456–462.

Abstract: Geol. Soc. Am., Bull., vol. vi, pp. 477–478.

Describes the occurrence of the dike in the Salina formation. Refers to the previous descriptions of this dike rock and describes its petrographic characters. Presents a table showing its chemical analysis, and of serpentine from Syracuse and mica-peridotite from Kentucky. Gives the records of various wells, showing the thickness of sedimentary strata through which the dike must have penetrated.

111 **Davis** (Floyd). The coal supplies of Polk County, Iowa.

Eng. and Mg. Jour., vol. lix, pp. 149–150.

Describes the character and distribution of coal beds in this county.

112 **Davis** (William Morris). The ancient outlet of Lake Michigan.

Pop. Sci. Monthly, vol. xlvi, pp. 217–229.

Reviews previous descriptions of the glacial history of the Great Lakes region and describes the glacial phenomena of the country adjacent to Lake Michigan in Illinois.

113 **Dawson** (George M.). Inter-Glacial climatic conditions.

Am. Geol., vol. xvi, pp. 65–66.

Discusses the evidence of the plant remains found at Toronto, Ont., in its bearing on the question of inter-Glacial climatic conditions.

114 **Dawson** (George M.) Note on the glacial deposits of southwestern Alberta.

Jour. of Geol., vol. iii, pp. 507–511.

Discusses the relations of the drift from the Laurentian area with drift along the eastern slopes of the Rocky Mountains.

115 —— Note on the amount of elevation which has taken place along the Rocky Mountain range in British America since the close of the Cretaceous period. [Reply to a letter from J. D. Dana.]

Am. Jour. Sci., 3d ser., vol. xlix, pp. 463–465.

Describes briefly the infolding of the Cretaceous rocks with the Paleozoic in the Rocky Mountains. Considers that the amount of elevation varied in different localities, and that 32,000 to 35,000 feet is a minimum estimate of the greatest elevation for the region. Discusses the evidences of movement in Eocene and Miocene times.

116 **Dawson** (J. William). Synopsis of the air-breathing animals of the Paleozoic in Canada, up to 1894.

Roy. Soc. of Canada, Proc. and Trans., vol. xii, sect. iv, pp. 71–88.

Reviews the literature on the subject and gives a brief description of the genera of the vertebrata, and a list of the genera and species of Arthropoda. Describes erect trees recently found in the Joggins coal mine, Nova Scotia, and the character of the flora of the Devonian plant-bearing beds at St. John, New Brunswick. Includes suggestions to collectors.

117 —— Review of the evidence for the animal nature of Eozoon canadense.

Geol. Mag. dec. iv, vol. ii, pp. 443–449, 502–506, and 545–550.

Describes the character of the strata in which Eozoon canadense occurs and discusses the petrographic, chemical, structural, and biologic evidences of its animal nature.

118 **Day** (William C.). Stone.

U. S. Geol. Surv., 16th Ann. Rept., part iv, pp. 436–510.

Gives a list of mineral constituents of granite, and a table showing the distribution in the United States of the various classes of granite. Describes the nature and varieties of sandstone and limestone.

119 **Derby** (Orville A.). Constituents of the Cañon Diablo meteorite.

Am. Jour. Sci., 3d ser., vol. xlix, pp. 101–110.

Describes the results of the several chemical analyses made of the material and concludes that the mass treated did not contain diamonds or anything remotely suggestive of them.

120 **D'Invilliers** (E. V.). [Carboniferous system, Pennsylvania.]

Pa. Geol. Surv., Final Rept., vol. iii, part 2, pp. 2153–2588, pls. 396–595.

Describes the character and distribution of the Lower Productive measures of Alleghany River coal series in Pennsylvania and the occurrence of coal in these beds. Includes vertical sections of many mines and names and figures of fossils from this formation.

121 —— **Smith** (A. D. W.), **Lesley** (J. P.), and. [Carboniferous formation, Pennsylvania.]

Pa. Geol. Surv., Final Rept., vol. iii, part i, pp. 1629–2152, pls. 205–395.

See Lesley (J. P.), D'Invilliers (E. V.), and Smith (A. D. W.), No. 292.

122 **Douglas** (Walter). Lake of the Woods, Ontario, gold district.

Eng. and Mg. Jour., vol. lix, p. 152.

Describes the occurrence of gold quartz veins in this district.

123 **Dowling** (D. B). Notes on the stratigraphy of the Cambro-Silurian rocks of eastern Manitoba.

Ottawa Nat., vol. ix, pp. 67-74.

Describes the lithologic character and succession of Lower Silurian rocks in the vicinity of Lake Winnipeg and gives a sketch map of this lake.

124 **Dumble** (E. T.). Cretaceous of western Texas and Coahuila, Mexico.

Geol. Soc. Am., Bull., vol. vi, pp. 375-388.

Gives a detailed section of the rocks of San Lorenzo, Coahuila. Describes the lithologic characters and names some of the fossils found in the Bosque, Fredericksburg, and Washita divisions of the Lower Cretaceous. Describes the distribution of the Dakota, Colorado, and Montana divisions of the Upper Cretaceous in Texas. Gives a general section of the Montana rocks and a list of fossils determined by Mr. T. W. Stanton.

125 —— Volcanic dust in Texas.

Science, new ser., vol. i, pp. 657-658 (correspondence).

Describes the occurrence of volcanic dust in material of which the larger part is formed of diatoms. Refers to the description of volcanic dust by H. W. Turner and quotes from Professor Cope as to the geologic age of the deposits from which the volcanic dust was obtained.

E.

126 **Earle** (Charles), **Osborn** (H. F.) and. Fossil mammals of the Puerco beds.

Am. Mus. Nat. Hist., Bull., vol. vii, pp. 1-70, figs. 120-121.

See Osborn (H. F.) and Earle (Charles) No. 362.

127 **Edwards** (Arthur M.). The occurrence of Tertiary clay on Long Island, N. Y.

Am. Jour. Sci., 3d ser., vol. l, p. 270 (⅓ p.) (communicated).

Describes the occurrence of upper Miocene clay containing marine Bacillariaceæ on Long Island.

128 **Eldridge** (George H.). A geological reconnoissance across Idaho.

U. S. Geol. Surv., 16th Ann. Rept., part ii, pp. 211-276, pls. xv-xvii, figs. 38-41.

Describes the topography of central Idaho, the drainage systems of the Snake and Columbia rivers, and the occurrence of granite and metamorphic and unaltered sedimentary rocks. Discusses the general structural features. Describes the gold and silver deposits and coal veins of the region.

129 **Elftman** (Arthur Hugo). Notes upon the bedded and banded structures of the gabbro and upon an area of troctolyte.

Minn. Geol. and Nat. Hist. Surv., 23d Ann. Rept., pp. 224-230.

Describes the megascopic characters and field relations of gabbro in northeastern Minnesota and its microscopic features.

130 **Ells** (R. W.). The Potsdam and Calciferous formations of Quebec and eastern Ontario.

Roy. Soc. of Canada., Proc. and Trans., vol. xii, sect. iv, pp. 21-30.

Describes the character and distribution of the Potsdam and Calciferous rocks in the Ottawa and St. Lawrence basins and also of the Cambrian in eastern Quebec.

131 **Ells** (R. W.). The Rensselaer grit plateau.

Ottawa Nat., vol. ix, pp. 9–11.

Reviews a paper by T. Nelson Dale on the same subject and refers to the work of J. W. Dawson in the same region and in the vicinity of Quebec.

132 —— How rocks are formed.

Ottawa Nat., vol. ix, pp. 157–166.

Discusses the theories of rock formation and describes the process of formation of the deposits in the vicinity of Ottawa, Canada.

133 —— Notes on recent sedimentary formations on the Bay of Fundy coast [Nova Scotia].

Nova Scotian Inst. of Sci., Proc. and Trans., vol. viii, pp. 416–419.

Describes beds of limestone and shale overlying the trap rocks of the region.

134 **Emerson** (Benjamin Kendall). A mineralogical lexicon of Franklin, Hampshire, and Hampden counties, Mass.

U. S. Geol. Surv., Bull. No. 126, 180 pp.

Consists of a condensed history of minerals occurring in these counties, chemical analyses of some of the species, and a bibliography of the literature.

135 —— Illustrations of peculiar mineral transformations.

Geol. Soc. Am., Bull., vol. vi, pp. 473–474.

Mentions the occurrence of serpentine pseudomorphs after olivine and calcite pseudomorphs after salt, and describes the puckering of corundum crystals around allanite.

136 **Emmons** (Samuel Franklin). Economic geology of the Mercur mining district, Utah. Introduction. The Oquirrh Mountains.

U. S. Geol. Surv., 16th Ann. Rept., part ii, pp. 349–369.

Describes the topography and gives an account of the discovery, development, and production of the mining district. Describes the structure of the range, the occurrence of the sedimentary and igneous rocks and the general economic geology of the district.

F.

137 **Fairbanks** (Harold W.). On analcite diabase from San Luis Obispo County, California.

Univ. of Cal., Dept. of Geol., Bull., vol. i, pp. 273–300, pl. 16.

Describes the field relations, contact metamorphism, and the microscopic and chemical characters of these rocks.

138 —— The stratigraphy of the California Coast ranges.

Jour. of Geol., vol. iii, pp. 415–433.

Describes the character, position, and faunal relations of the Golden Gate series and discusses the evidences of a nonconformity between the Knoxville and Golden Gate beds, between the Chico and Knoxville, and between the Miocene and Chico-Tejon series.

139 **Fairbanks** (Harold W.). Review of our knowledge of the geology of the California Coast ranges.

Geol. Soc. Am., Bull., vol. vi, pp. 71-102.

Discusses the use of the term Coast ranges as employed by different geologists, gives a summary of previous work, and compares the age and relations of the Coast ranges and Sierra Nevada. Describes the character of the crystalline basement complex, the lithologic character, extent, and relations of the pre-Cretaceous series, the alteration of the eruptives, and the characteristics and relations of the rocks of the Klamath Mountains. Discusses the general features of the orographic movement, the paleontologic and stratigraphic evidence of the age of the sedimentary series, and the relations of the Cretaceous and pre-Cretaceous strata. Describes the Eocene and Miocene formations of these ranges.

140 —— Auriferous conglomerate in California.

Eng. and Mg. Jour., vol. lix, pp. 389-390.

Describes the occurrence of an auriferous conglomerate in Siskiyou County, its geologic relations, and the structure of the region.

141 **Fairchild** (H. L.). Glacial lakes of western New York.

Geol. Soc. Am., Bull., vol. vi, pp. 353-374, pls. 18-23.

Presents a hydrographic map of western New York, and in a table gives a list of extinct lakes, their altitudes, and estimated dimensions. Describes the history and phenomena of some of these glacial lakes.

142 —— Lake Newberry the probable successor of Lake Warren.

Abstract: Geol. Soc. Am., Bull., vol. vi, pp. 462-466.

Discusses the evidences which indicate the formation, extent, and duration of Lake Newberry.

143 —— The kame-moraine at Rochester, N. Y.

Am. Geol., vol. xvi, pp. 39-51, with map.

Describes the location, topographic features, and the structure and composition of the Pinnacle Hills, in the vicinity of Rochester. Describes their morainic character and the process of their formation, and compares them with neighboring kame areas.

144 **Ferrier** (W. F.). Crystals.

Ottawa Nat., vol. ix, pp. 117-131.

Describes the formation of crystals and reviews the literature of the subject.

145 **Foerste** (Aug. F.). On Clinton conglomerates and wave marks in Ohio and Kentucky. With a résumé of our knowledge of similar occurrences in other Silurian strata of these States, and their evidence upon probable land conditions.

Jour. of Geol., vol. iii, pp. 50-60, and 169-197.

Gives a description of observations, by the author and others, of rounded limestone pebbles and wave marks in the Cincinnati, Oneida, Medina, and Clinton groups in Ohio and Kentucky. Includes remarks on the occurrence of the Upper Silurian and Devonian formations in the same region, a résumé of the facts regarding the geographic distribution of the pebbles and wave marks, and the conclusions to be drawn from them concerning the existence of land areas in Lower Silurian and Clinton times.

146 **Foote** (Warren M.). Note on the occurrence of leadhillite pseudomorphs at Granby, Mo.
Am. Jour. Sci., 3d ser., vol. l, pp. 99–100.
Describes pseudomorphs after calcite and galena.

147 —— Preliminary note on a new alkali mineral.
Am. Jour. Sci., 3d ser., vol. l, pp. 480–481.
Describes briefly the chemical and crystallographic characters of a new mineral from California, for which the term "northupite" is proposed.

148 —— Preliminary note on a new alkali mineral.
Phil. Acad. Nat. Sci., Proc., 1895, pp. 408–409.
Describes the crystallographic and chemical characters of northupite, found at Borax Lake, California.

149 **Frech** (F.). Das Profil des Grossen Colorado-Cañon.
Neues Jahr. für Min., etc., 1895, Band II, pp. 153–156.
Gives the vertical section of the Cambrian rocks of Colorado canyon and a description of the geologic history of the region.

150 **Freeman** (H. C.). The Ammon mines, Fergus County, Montana.
Eng. and Mg. Jour., vol. lix, pp. 416–417.
Describes the occurrence of gold on the contact of limestone and porphyry in this locality.

151 —— Boulder mining district, Montana.
Eng. and Mg. Jour., vol. lx, pp. 583-584.
Gives a historical review of mining in this district and a brief description of the gold ores.

152 **Fultz** (Francis M.). Erosion during the deposition of the Burlington limestones.
Am. Geol., vol. xv, pp. 128–130 (correspondence).
Describes deposits near Burlington, Iowa, which indicate a cessation of deposition and erosion, and renewal of deposition during the formation of the Burlington limestones.

153 —— How old is the Mississippi?
Abstract: Iowa Acad. Sci., Proc., vol. ii, p. 39 (½ p.).
Gives brief notes on the geologic history of this river.

154 —— Formation of the flint beds of the Burlington limestones.
Abstract: Iowa Acad. Sci., Proc., vol. ii, p. 177.
Brief note on the occurrence of these beds.

155 —— Coincidence of present and pre-Glacial drainage system in extreme southeastern Iowa.
Abstract: Iowa Acad. Sci., Proc., vol. ii, pp. 208-209 (½ p.).
Comprises brief notes on the drainage systems of the region.

156 —— Extension of the Illinois lobe of the great ice sheet into Iowa.
Iowa Acad. Sci., Proc., vol. ii, pp. 209–212.
Discusses the general features of the ice invasion of the State.

157 —— Glacial markings in southeastern Iowa.
Iowa Acad. Sci., Proc., vol. ii, pp. 213–217, pls. xxi-xxii.
Describes the character and directions of the markings.

G.

158 **Geikie** (James). The classification of European glacial deposits.

Jour. of Geol., vol. iii, pp. 241–269.

Describes the glacial phenomena of Europe and gives the author's classification.

159 **Gibson** (A. M.). Report upon the Coosa coal field [Alabama].

Ala. Geol. Surv., Montgomery, Ala., 143 pp.

Describes the topographic features of the coal field, with detailed description of the occurrence of coal seams. Includes a sheet of cross sections, showing the geologic structure and succession in the region.

160 **Gilbert** (Grove Karl). Lake basins created by wind erosion.

Jour. of Geol., vol. iii, pp. 47–49.

Abstract: Sci. Am. Suppl., vol. xxxix, p. 16157.

Discusses the evidences of the action of the wind in forming small lake basins in the arid portion of the Arkansas basin.

161 —— Sedimentary measurement of Cretaceous time.

Jour. of Geol., vol. iii, pp. 121–127.

Abstract: Sci. Am. Suppl., vol. xxxix, pp. 16180–16181.

Describes certain alternations of strata in Colorado, correlates these with the precession of the equinoxes, and from this deduces an estimate in years of a portion of Cretaceous time.

162 —— New light on isostasy.

Jour. of Geol., vol. iii, pp. 331–334.

Discusses the results obtained by Mr. G. R. Putnam in the measurement of gravity by means of the pendulum.

163 —— A rock fissure.

Science, new ser., vol. 2, pp. 117–119.

Describes a rock fissure in Carboniferous limestone in Arizona, considered to be the result of tension of the rock. Describes the character of the faults in the vicinity.

164 —— and **Gulliver** (F. P.). Tepee Buttes.

Geol. Soc. Am., Bull., vol. vi, pp. 333–342, pl. 17.

Describes the character of the Pierre group of Colorado, in which the buttes occur, the distribution and general features of the buttes, and the lithologic and faunal characters of the tepee rock. Discusses the origin of the cores and the conditions affecting their distribution, form, and size, and compares them with buttes of other origin.

165 **Gilpin** (E.). Note on the Sydney coal field [Nova Scotia].

Nova Scotian Inst. of Sci., Proc. and Trans., vol. viii, pp. 435–438.

Contains description of a subordinate coal basin within the Sydney coal field.

166 **Girty** (George H.). Development of the corallum in Favosites forbesi var. occidentalis.

Am. Geol., vol. xv, pp. 131–146, pls. vii–viii.

The material on which this paper is based was found in the Niagara shales of Waldron, Ind. Describes the development of the coralla in Favosites forbesi, F. spiniferus, and F. conicus, and discusses the evidences, which show to what extent the development observed in F. forbesi is characteristic of Favosites as a genus.

167 **Goode** (G. Brown.). Bibliography of the United States National Museum for the fiscal year ending June 30, 1893.

U. S. Nat. Mus., Rept. for 1893, appendix vii, pp. 285–313.

168 **Gordon** (Charles H.). Buried river channels in southeastern Iowa.

Iowa Geol. Surv., vol. iii, 2d Ann. Rept., pp. 239–255.

Describes the drainage of the region and gives the section exposed at various localities and in several well borings. Describes the history of the drainage diversion.

169 —— Geology of Van Buren County [Iowa].

Iowa Geol. Surv., vol. iv, 3d Ann. Rept., pp. 201–254, pls. vi–vii, figs. 19–26, with geologic map.

Describes the physiography and drainage of the region and the lithologic and stratigraphic characters of the Carboniferous and Pleistocene formations. Gives vertical sections of several well borings and describes the occurrence of coal, clay, and building stone.

170 —— Stratigraphy of the St. Louis and Warsaw formations in southeastern Iowa.

Jour. of Geol., vol. iii, pp. 289–311, with map.

Reviews the earlier geologic descriptions of this region, gives a cross section, and describes the lithologic character of the exposures at a number of localities. Describes the characteristics of the formations and the unconformities above and below the St. Louis limestone. Discusses the origin of the brecciated character and dolomitization of this limestone.

171 **Gosling** (Edgar B.). A treatise on ozokerite.

School of Mines Quart., vol. xvi, pp. 41–68.

Describes its properties and the geology of portions of Europe and of the central Rocky Mountain States in which it occurs. Describes the process of treatment and its uses.

172 **Grant** (C. C.). Opening address.

Hamilton Assoc., Jour. and Proc., No. xi, pp. 60–64.

Contains remarks on certain graptolites and notes on the occurrence of Niagara fossils in the vicinity of Hamilton, Ontario.

173 —— Brief note on the Devonian rocks, Ontario.

Hamilton Assoc., Jour. and Proc., No. xi, pp. 65–70.

Remarks on the fossil fauna and flora of Devonian rocks

174 —— Geological notes in continuation.

Hamilton Assoc., Jour. and Proc., No. xi, pp. 71–78.

Contains notes on glacial phenomena in Ontario and on the Silurian rocks of Anticosti and Quebec.

175 **Grant** (U. S.). The name of the copper-bearing rocks of Lake Superior.

Am. Geol., vol. xv, pp. 192–194 (correspondence).

Discusses the use of the terms Keweenawan and Nipigon to designate the copper-bearing rocks of Lake Superior, and quotes from several papers to show that the name Keweenawan should be adopted.

176 —— **Winchell** (H. V.) and. Preliminary report on the Rainy Lake gold region.

Minn. Geol. and Nat. Hist. Surv., 23d Ann. Rept., pp. 36–105.

See Winchell (H. V.) and Grant (U. S.), No. 548.

177 **Gratacap** (L. P.). The possible revival of Virginia City, Nevada.

Sci. Am. Suppl., vol. xl, pp. 16329–16330.

Describes the occurrence of the ore bodies in this region.

178 **Griswold** (Leon S.). The origin of the Arkansas novaculites.

Boston Soc. Nat. Hist., Proc., vol. xxvi, pp. 414–421.

Describes the field relations of the Arkansas novaculites and discusses their origin, with special reference to a paper by F. Rutley on the same subject.

179 —— Origin of the Lower Mississippi.

Boston Soc. Nat. Hist., Proc., vol., xxvi, pp. 474–479, with map.

Compares the Cretaceous peneplain of Arkansas with that of the Appalachian region and describes the development of the former.

180 **Gulliver** (F. P.), **Gilbert** (G. K.) and. Tepee buttes.

Geol. Soc. Am., Bull., vol. vi, pp. 333–342, pl. 17.

See Gilbert (G. K.) and Gulliver (F. P.), No. 164.

181 **Gurley** (W. F. E.), **Miller** (S. A.) and. New and interesting species of Paleozoic fossils.

Ill. State Mus. Nat. Hist., Bull. No. 7, pp. 89, pls. i–v.

See Miller (S. A.) and Gurley (W. F. E.), No. 346.

H.

182 **Hall** (C. W.). Mineral alterations in the granitic rocks of the Northwestern States.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xliii, p. 236 (½ p.).

Discusses the alterations of granites in Minnesota and Wisconsin.

183 —— and **Sardeson** (F. W.). The Magnesian series of the Northwestern States.

Geol. Soc. Am., Bull., vol. vi, pp. 167–198, pl. 2.

Discusses the lithologic and paleontologic characteristics of the series. Describes the local features of the St. Lawrence dolomites and shales, Jordan sandstone, Oneota dolomite, New Richmond sandstone, and the Shakopee dolomite. Discusses the lithology and genesis of the sandstones, shales, and dolomites. Includes a geologic map of portions of Minnesota, Iowa, Wisconsin, and Illinois.

184 **Halse** (Edward). The silver district of Tehuilotepec, State of Guerrero, Mexico.

Eng. and Mg. Jour., vol. lx, pp. 197–199.

Describes the occurrence of silver ores in this region and the character of the mining and ore reduction processes.

185 **Harris** (Gilbert D.). New and otherwise interesting Tertiary Mollusca from Texas.

Phila. Acad. Nat. Sci., Proc. 1895, pp. 45–88, pls. 1–9.

Describes many new species from the Tertiary rocks of Texas.

186 **Harris** (Hunter L.). History of the Atlantic shore line.

Elisha Mitchell Sci. Soc., Jour. 1894, part ii, pp. 33–50.

Discusses the evidences of the changes that have affected the Atlantic shore line of the United States during geologic times.

187 **Hastings** (John B.). The Atlanta lode, Idaho.

Eng. and Mg. Jour., vol. lix, p. 128.

Describes the occurrence of gold ore at this locality.

188 —— Subclassification of zenogenous ore deposits.

Eng. and. Mg. Jour., vol. lix, pp. 268–269.

Discusses some recent proposed classifications of ore deposits.

189 **Haworth** (Erasmus). The stratigraphy of the Kansas Coal Measures.

Kans. Univ. Quart., vol. iii, pp. 271–290, pl. xx.

Describes the character and distribution of the strata which form the Coal Measures, and discusses the conditions of their deposition. Includes a generalized vertical section of the Coal Measures.

190 —— Division of the Kansas Coal Measures.

Kans. Univ. Quart., vol. iii, pp. 291–295.

Discusses the evidences of changes in the strata upon which to base a subdivision of the Coal Measures.

191 —— The coal fields of Kansas.

Kans. Univ. Quart., vol. iii, pp. 297–309.

Describes the area of the coal fields and the geologic position of the coal beds, and discusses the physical and chemical properties of the coals.

192 —— Stratigraphy of the Kansas Coal Measures.

Am. Jour. Sci., 3d ser., vol. l, pp. 452–466.

Describes the distribution of the Mississippian formation which forms the floor of the Coal Measures. Gives the thickness of the various series of limestones and shales which comprise the Coal Measure formation, as shown by outcrops and records of well borings, and describes their distribution. Gives lists of fossils collected from several horizons. Discusses the ratio of limestone to shales. Includes a map showing the line of outcrop of the various subdivisions, a generalized vertical section of the Coal Measures, and the section shown by a boring at Topeka to a depth of about 1,600 feet.

193 —— Oil and gas in Kansas.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xliii, pp. 229–236.

Describes the past production of oil and gas in southeastern Kansas and the character and distribution of the Coal Measure shales and sandstones in which they occur. Discusses the relation of oil and gas to anticlinals and synclinals and the evidences as to their original source.

194 **Hay** (O. P.). Description of a new species of Petalodus (P. securiger) from the Carboniferous of Illinois.

Jour. of Geol., vol. iii, pp. 561–564.

Describes and figures the characters of the dentition of Petalodus securiger and compares it with P. destructor.

195 **Hay** (Robert). Water resources of a portion of the Great Plains.

U. S. Geol. Surv., 16th Ann. Rept., part ii, pp. 535–588, pls. xl–xlii, figs. 58–65.

Describes the hydrographic, geologic, and topographic features and water-bearing formations of a portion of western Kansas and Nebraska and eastern Colorado.

196 **Hayes** (Charles Willard). Bauxite.

U. S. Geol. Surv., 16th Ann. Rept., part iii, pp. 547–597, pls. xx–xxiii, figs. 6–9.

Includes notes on the occurrence of bauxite in New Mexico and Arkansas and a description of the topography, stratigraphy, and structure of the Georgia and Alabama bauxite region, illustrated by a geologic map and vertical section. Describes the ores and associated deposits and discusses the origin of bauxite deposits, the source of the material, and the age of the strata.

197 —— The Tennessee phosphates.

U. S. Geol. Surv., 16th Ann. Rept., part iv, pp. 610–630, pls. v–vi.

Describes the character and occurrence of the phosphate in Devonian strata and the local characters of the various deposits. Discusses the origin of the deposits. Accompanied by a map of the phosphate region and vertical sections.

198 —— Stevenson folio—Alabama, Georgia, Tennessee.

U. S. Geol. Surv., Geol. Atlas of the U. S., folio 19.

Describes the physiography of the region, the character and distribution of the Silurian, Devonian, and Carboniferous rocks, and the geologic structure of the region. Describes the occurrence of coal, iron, building stone, road material, clay, and the character of the soils. Contains topographic, colored areal geologic, economic geologic, and structure section maps and vertical sections.

199 —— Cleveland folio, Tennessee.

U. S. Geol. Surv., Geol. Atlas of the U. S., folio 20.

Describes the geography and stratigraphy of the region, the character and distribution of the Algonkian, Cambrian, Silurian, Devonian, and Carboniferous rocks, the geologic structure and the occurrence of iron, lead, building stone, clay, and soils. Contains topographic, colored areal geologic, economic geologic, and structure section maps and a sheet of columnar sections.

200 —— Pikeville folio, Tennessee.

U. S. Geol. Surv., Geol. Atlas of the U. S., folio 21.

Describes the geography, topography, and stratigraphy of the region, the character and distribution of the Silurian, Devonian, and Carboniferous rocks, the geologic structure, and the occurrence of coal, iron, building stone, clay, and soils. Accompanied by topographic, colored areal geologic, economic geologic, and structure section maps and a sheet of columnar sections.

201 —— McMinnville folio, Tennessee.

U. S. Geol. Surv., Geol. Atlas of the U. S., folio 22.

Describes the geography, topography, and stratigraphy of the region, the character and distribution of the Silurian, Devonian, and Carboniferous formations, the geologic structure, and the occurrence of coal, iron, building stone, clay, and soils. Gives a generalized section and two vertical sections of the coal beds. Accompanied by topographic, colored areal geologic, economic geologic, and structure section maps.

202 —— The geological relations of the southern Appalachian bauxite deposits.

Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 243–254 and 861.

Presents a geologic map of the Georgia and Alabama bauxite deposits, describes the stratigraphy, general geology, and character of the ore bodies, and discusses the origin of the deposits.

203 **Heilprin** (Angelo). The Port Kennedy deposit [Pennsylvania].
Phila. Acad. Nat. Sci., Proc. 1895, p. 451 (¼ p.).
Discusses briefly the faunal evidence of the age of the deposit.

204 —— The glaciers of Greenland.
Pop. Sci. Monthly, vol. xlvi, pp. 1–14.
Describes and illustrates the glacial phenomena of Greenland.

205 **Hershey** (Oscar H.). The Columbia formation in northwestern Illinois.
Am. Geol., vol. xv, pp. 7–24.
Describes the character and distribution of the three members of the Columbia formation, the Florence gravel, valley loess, and upland loess. Discusses the relation of the loess to the drift, the sequence of glacial history in northwestern Illinois, and the correlation with the Columbia formation in the Lower Mississippi Valley.

206 —— The Devonian series in southwestern Missouri.
Am. Geol., vol. xvi, pp. 291–300.
Describes the occurrence of the Eureka shale in Arkansas and of the other Devonian rocks of the Ozark series. Discusses the evidences of elevation and subsidence in this region, and the correlations indicated by the lithologic and stratigraphic relations.

207 —— River valleys of the Ozark plateau.
Am. Geol., vol. xvi, pp. 338–357.
Describes the extent and character of the Jura-Cretaceous peneplain and the Tertiary and Quaternary valleys. Discusses the cause of the meandering courses of the rivers and of the comparative straightness of the Missouri Valley. Describes the deposits of local drift in the valleys, considered to be equivalent to the Lafayette formation. Describes the post-Lafayette elevation, the Columbian formation, and the post-Columbia elevation, and gives a summary of the geologic history of the Ozark plateau since the Jurassic period.

208 —— On a Devonian limestone breccia in southwestern Missouri.
Science, new ser., vol. i, pp. 676–678.
Describes the character of a limestone breccia deposit in Stone County, Mo., and discusses the causes of its formation.

209 **Hice** (R. R.). The inner gorge terraces of the upper Ohio and Beaver rivers.
Am. Jour. Sci., 3d ser., vol. xlix, pp. 112–120.
Describes the character and the process of formation of the terraces of the Ohio and Beaver rivers in Pennsylvania and the relations of the terraces and rock benches. Considers that the rock benches of the two rivers belong to the same series, and that the inner gorge was formed during two periods. Reviews the evidences which show the existence of a buried channel and the character of the alluvium. Gives a list of the principal papers on this subject.

210 **Hill** (Robert T.). Discovery of a dicotyledonous flora in the Cheyenne sandstone.
Am. Jour. Sci., 3d ser., vol. xlix, p. 473 (communicated).
Contains brief remarks on the discovery of a dicotyledonous flora in the Cheyenne sandstone in the basal beds of the Comanche series in southern Kansas.

211 **Hill** (Robert T.). On outlying areas of the Comanche series in Kansas, Oklahoma, and New Mexico.

Am. Jour. Sci., 3d ser., vol. l, pp. 205-234.

Reviews the previous descriptions of the Cretaceous series in this region. Gives the section at Black Hills, Comanche County, Kans., and that near Belvidere. Reviews the descriptions of these sections by Professor Cragin. Includes notes on the fossil plants by F. H. Knowlton and on the fossil Mollusca by T. W. Stanton. Compares the fauna of these beds with that of the Comanche series in Texas. Considers that these outlying beds represent the attenuated northern extension of the Washita and probably a portion of the Fredericksburg division of the Texas Comanche series.

212 —— The radiolarian earths of Cuba.

Science, new ser., vol. i, pp. 628-629.

Quotes from recent publications on radiolarian earths of the West Indian region and describes the determination of the radiolarian remains and their geologic age.

213 **Hill** (Walter Hovey). The Deadwood placer claims, Idaho.

Eng. and Mg. Jour., vol. lx, pp. 225-226.

Describes the character of these placer deposits.

214 —— The gold belt of Idaho.

Eng. and Mg. Jour., vol. lx, p. 172.

Gives a historical sketch of gold mining in Idaho and a brief description of the mining districts.

215 **Hillebrand** (W. F.). Calaverite from Cripple Creek, Colorado.

Am. Jour. Sci., 3d ser., vol. l, pp. 128-131 and 426.

Gives a chemical analysis of material from the Cripple Creek mines, which shows the presence of calaverite. Includes crystallographic notes by S. L. Penfield.

216 —— Chemical composition of calaverite from Cripple Creek, Colorado.

U. S. Geol. Surv., 16th Ann. Rept., part ii, pp. 133-135.

Describes the occurrence of the mineral and its chemical composition.

217 **Hitchcock** (C. H.). Divisions of the ice age in the United States and Canada.

Am. Geol., vol. xv, pp. 330-335 (correspondence).

Discusses the evidences of maximum glaciation during Lafayette time. Reviews recent literature on the unity of the Glacial epoch and discusses the evidences thus presented.

218 —— The Connecticut sandstone group.

Science, new ser., vol. i, pp. 74-77.

Gives a historical account of the use of the term "Connecticut" or "Connecticut sandstone group" to designate the Triassic areas of eastern North America.

219 —— High-level gravels in New England.

Abstract: Geol. Soc. Am., Bull., vol. vi, p. 460 (½ p.).

Describes beach lines in the basin of Lake Memphremagog and adjacent region, which indicate the existence of glacial lakes.

220 **Hobbs** (William Herbert). A contribution to the mineralogy of Wisconsin.

Univ. of Wis., Science ser., vol. i, pp. 109–156, pls. 4–8.

Gives a list of papers on the subject and describes the mineralogic characters of quartz, arsenopyrite, calcite, smithsonite, galena, cerussite, sphalerite, gypsum, barite, marcasite, pyrite, azurite, malachite, and diamonds.

221 —— Mineralogical notes. With analyses by Herman Schlundt and Louis Kahlenberg.

Am. Jour. Sci., 3d ser., vol. l, pp. 121–128.

Describes and gives the chemical composition of cerussite from Montana, barite, manganite, and chloritoid from Michigan, and hessonite in a pegmatite from Connecticut.

222 **Hoffman** (G. Christian). Chemical contributions to the geology of Canada from the laboratory of the Survey.

Canada Geol. Surv., Ann. Rept., 1892–93, new ser., vol. vi, Rept. R, 93 pp.

Gives chemical analyses of rocks and minerals from Canada.

223 —— A plumbiferous tetrahedrite.

Am. Jour. Sci., 3d ser., vol. l, pp. 273–274 (½ p.) (communicated).

Describes the mineralogic and chemical characters of a plumbiferous tetrahedrite from British Columbia.

224 **Hollick** (Arthur). Dislocations in certain portions of the Atlantic Coastal Plain strata and their probable cause.

N. Y. Acad. Sci., Trans., vol. xiv, pp. 8–20, figs. 1-5.

Abstract: Geol. Soc. Am., Bull., vol. vi, pp. 5–7.

Discusses the theories concerning the cause of the principal lines of disturbance in the Atlantic Coastal Plain and describes the tilted and folded deposits underlying portions of the terminal moraine in this region. Discusses the theories of mountain-making forces or ice action as the cause of the folding and faulting.

225 —— Descriptions of new leaves from the Cretaceous (Dakota group) of Kansas.

Torrey Bot. Club, Bull., vol. xxii, pp. 225–228, pls. 236–237.

Gives descriptions and figures of three new species of fossil plants.

226 —— A new fossil Liriodendron from the Laramie at Walsenberg, Colo., and its significance.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xliii, p. 225 (½ p.).

227 **Holm** (Theo.). On the validity of some fossil species of Liriodendron.

Bot. Gazette, vol. xx, pp. 312-316, pl. xxiii.

Reviews the description of certain fossil plants by Arthur Hollick.

228 **Hovey** (E. O.). Notes on some specimens of minerals from Washton Heights, New York City.

Am. Mus. Nat. Hist., Bull., vol. vii, pp. 341-342.

Describes the characters of xenotime, monazite, and tourmaline, and mentions the associated minerals.

229 **Hovey** (Horace C.). The Isles of Shoals [New Hampshire].

Sci. Am. Suppl., vol. xl, pp. 16547-16548.

Discusses the evidences of recent elevation in this region and of the results of other dynamic forces.

230 **Howell** (E. E.). On two meteorites.

Am. Jour. Sci., 3d ser., vol. l, pp. 252-254.

Describes a meteorite found in Cherokee County, Ga., and one from El Capitan Mountains of New Mexico, and gives their chemical analyses.

231 **Hunt** (A. E.). Bauxite.

Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 855-861.

In discussion of papers on "Bauxite" by Messrs. Laur and Hayes, gives tables of production and chemical analyses of bauxite.

232 **Hyatt** (Alpheus). Remarks on the genus Nanno Clarke.

Am. Geol., vol. xvi, pp. 1-12, pl. i.

Gives the results of the author's study of the types from which the genus was described and discusses the bearing of this new evidence on the affinities of the forms of Endoceratidæ.

I.

233 **Iddings** (Joseph P.). Absarokite-shoshonite-banakite series.

Jour. of Geol., vol. iii, pp. 935-959.

Describes the petrographic characters and gives chemical analyses of absarokite, shoshonite, and banakite from the Yellowstone National Park and of similar rocks in neighboring regions.

234 —— **Penrose** (R. A. F., jr.) and. Review of "The Penokee iron-bearing series of Michigan and Wisconsin," by R. D. Irving and C. R. Van Hise.

Jour. of Geol., vol. iii, pp. 221-227.

J.

235 **James** (Joseph F.). The first fauna of the earth.

Am. Nat., vol. xxix, pp. 879-887 and 979-985.

Reviews the early history of geologic and paleontologic research, and gives figures of many fossils of the Cambrian formations.

236 —— Remarks on Daimonelix or "Devil's corkscrew" and allied forms.

Am. Geol., vol. xv, pp. 337-342, pls. xi-xii.

Reviews the description of this genus by E. H. Barbour, and refers to descriptions of similar fossils from Switzerland by Oswald Heer and to descriptions of fossils by James Hall and J. S. Newberry, which are considered to have affinities to those above mentioned.

237 —— Manual of the Paleontology of the Cincinnati group.

Cin. Soc. Nat. Hist., Jour., vol. xviii, pp. 67-88.

Continues the description of the fossils found in the Cincinnati group begun in a former paper and noticed in the Bibliography and Index for 1892-93 and 1894.

238 **Jones** (Arthur J.). Record of the Grinnell deep boring [Iowa].

Iowa Acad. Sci., Proc., vol. ii, pp. 31-35.

Describes the character of the rocks penetrated to a depth of 2,002 feet and gives a chemical analysis of the water.

239 **Jones** (Arthur J.). Topaz crystals of Thomas Mountain, Utah.

Iowa Acad. Sci., Proc., vol. ii, pp. 175–177.

Describes the occurrence of the crystals and discusses briefly their origin.

240 **Jones** (T. Rupert). On some fossil Ostracoda from Canada.

Geol. Mag., dec. iv, vol. ii, pp. 20–28, pl. ii.

Describes new species found in Quaternary beds of Manitoba and in the Laramie of Alberta.

K.

241 **Kain** (Samuel W.). Bibliography of scientific publications relating to the Province of New Brunswick other than those contained in the bulletins of the society, 1890–1895.

New Brunswick Nat. Hist. Soc., Bull., No. xiii, pp. 96–100.

This bibliography includes the subjects of geology, paleontology, physiography, botany, zoology, and ethnology.

242 **Keith** (Arthur). Knoxville folio-Tennessee, North Carolina.

U. S. Geol. Surv., Geol. Atlas of the U. S., folio 16.

Describes the physiography of the region, the character and distribution of the Ococe group, the Cambrian, Silurian, Devonian, and Carboniferous rocks, the structure of the region, and the occurrence of marble, building stone, lime, and clay. Includes topographic, colored areal geologic, economic geologic, and structure section maps.

243 **Kemp** (J. F.). The nickel mine at Lancaster Gap, Pennsylvania, and the pyrrhotite deposits at Anthony's Nose, on the Hudson [New York].

Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 620–633 and 888, figs. 1–6.

Abstract: Geol. Soc. Am., Bull., vol. vi, p. 3 (9 l.).

Describes the occurrence of pyrrhotite in these mines and discusses its origin.

244 —— Crystalline limestone, ophicalcites, and associated schists of the eastern Adirondacks [New York].

Geol. Soc. Am., Bull., vol. vi, pp. 241–262.

Reviews the previous and contemporary work in this region. Describes the distribution and occurrence of the limestones and associated rocks. Presents cross sections of the type localities and describes the petrographic characters of the limestone, ophicalcites, hornblendic, graphitic, and other schists, and granulite.

245 —— The geology of Moriah and Westports townships, Essex County, N. Y.

N. Y. State Mus., Bull., vol. iii, No. 14, pp. 325–355, pls. i–iv, figs. 1–5, with geologic map.

Describes the character and distribution of the gneisses, gabbros, crystalline limestones, and Cambro-Silurian sediments, and the petrographic characters of the gneisses, limestones, black schists, gabbros, and anorthosites. Describes the characters of the iron ores of the region.

246 —— The geological section of the East River at Seventeenth street, New York.

N. Y. Acad. Sci., Trans., vol. xiv, pp. 273–276.

Describes the occurrence of igneous rocks and dolomite in a tunnel at this locality.

247 **Kemp** (J. F.). The zinc mines at Franklin Furnace and Ogdensburg, N. J.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xliii, p. 237 (½ p.).

248 —— **Darton** (N. H.) and. A newly discovered dike at Dewitt, near Syracuse, New York. Geological notes by N. H. Darton. Petrographic description by J. F. Kemp.

Am. Jour. Sci., 3d ser., vol. xlix, pp. 456–462.

See Darton (N. H.) and Kemp (J. F.), No. 110.

249 **Kennedy** (William). Iron ores of east Texas.

Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 258–288 and 862–863.

Gives a historical review of the iron industry of the region, describes the general geology, and discusses the age and classification of the ores. Gives many chemical analyses of iron ores, and data as to its strength and the methods of mining.

250 —— The Eocene Tertiary of Texas east of the Brazos River.

Phila. Acad. Nat. Sci., Proc. 1895, pp. 89–160.

Compares the Tertiary strata of Alabama and Texas and describes the character and distribution of the Tertiary rocks of Texas, including sections at many localities and lists of fossils collected. Gives a résumé of the Tertiary history of the Texas region.

251 **Keyes** (Charles Rollin). The origin and relations of central Maryland granites.

U. S. Geol. Surv., 15th Ann. Rept., pp. 685–740, pls. xxxvi–xlviii, figs 23–29.

Describes the geologic features and petrographic characters of central Maryland granites. Describes the exposures in different parts of the region and discusses the origin and age of the granites and gneisses.

252 —— Bibliography of North American Paleontology, 1888–1892.

U. S. Geol. Surv., Bull. No. 121, 251 pp.

Comprises a brief review of paleontologic literature, and author's list of papers, a title index, and subject entries and cross references.

253 —— Glacial scorings in Iowa.

Iowa Geol. Surv., vol. iii, 2d Ann. Rept., pp. 149–165, pls. ix–xv.

Describes the glacial scorings in various parts of the State and gives a table showing the observed directions of the striæ.

254 —— Gypsum deposits of Iowa.

Iowa Geol. Surv., vol. iii, 2d Ann. Rept., pp. 259–304, pls. xxi–xxv.

Describes the topographic and geologic features of the gypsum region and the character and extent of the gypsum beds. Discusses their origin and geologic age. Presents a geologic map of the gypsum region.

255 —— Economic geology of Lee County [Iowa].

Iowa Geol. Surv., vol. iii, 2d Ann. Rept., pp. 307–407, pls. xxvi–xxxii, with geologic map.

Describes the physiography of the county and the character and distribution of the subdivisions of the Carboniferous formation. Gives sections exposed at various localities and mentions fossils found. Describes the occurrence of coal, building stone, clay, cement, lime, and artesian and mineral waters.

256 **Keyes** (Charles Rollin). Economic geology of Des Moines County [Iowa].

Iowa Geol. Surv., vol. iii, 2d Ann. Rept., pp. 411-492, pls. xxxiii-xxxvii, with geologic map.

Describes the topographic character of the region and the distribution, lithologic character, and structure of the Carboniferous and Pleistocene formations. Gives sections exposed at different places and mentions fossils found. Describes the occurrence of building stone, clay, coal, and lime.

257 —— Paleontology of Missouri, Part I.

Mo. Geol. Surv., vol. iv, 1894, pp. 271, pls. i-xxxii, figs. 1-9, with geologic map of the State.

Describes the lithologic character, distribution, and structure of the Archean, Algonkian, Silurian, Devonian, and Carboniferous formations in Missouri, and includes descriptions of protozoans, sponges, corals, echinoderms, and crustaceans, and a stratigraphic catalogue of Missouri fossils.

258 —— Paleontology of Missouri, Part II.

Mo. Geol. Surv., vol. v, 1894, pp. 266, pls. xxxiii-liv, figs. 10-11.

Describes the specific characters of polyzoans, brachiopods, lamellibranchs, gasteropods, cephalopods, and vertebrates occurring in Missouri, and includes a synonymic index to the fossils of Missouri.

259 —— Secular decay of granitic rocks.

Iowa Acad. Sci., Proc., vol. ii, pp. 27-31, pls. ii-iv.

Describes the disintegration of granitic rocks of Maryland and Missouri, and discusses the general process of secular decay of similar rocks.

260 —— Synopsis of American Paleozoic echinoids.

Iowa Acad. Sci., Proc., vol. ii, pp. 178-194, pls. xviii-xx.

Remarks on the general characters and distribution of echinoids, and describes and figures a number of species.

261 —— Opinions concerning the age of the Sioux quartzite.

Iowa Acad. Sci., Proc., vol. ii, pp. 218-222.

Reviews previous opinions as to the age of this formation, and mentions finding impressions resembling certain lamellibranchs.

262 —— The Cambro-Silurian question in Missouri and Arkansas.

Jour. of Geol., vol. iii, pp. 519-526.

Reviews previous papers concerning the age of the sedimentary rocks of the Ozark series in Missouri and Arkansas, and discusses the evidences of the stratigraphic succession and age of the beds which make up this series.

263 —— Acidic eruptions of northeastern Maryland.

Am. Geol., vol. xv, pp. 39-46.

Describes the granitic rocks of northeastern Maryland, discusses the evidences of continual changing in the physical condition of rocks, and remarks on the economic value of the Port Deposit granite.

264 —— A hypsometric map of Missouri.

Am. Geol., vol. xv, pp. 314-317.

Mentions the different sources from which data have been obtained concerning the elevation of different localities in the State, and presents a sketch map showing the location of lines of precise leveling and of railway lines whose levels are used for primary control.

265 **Keyes** (Charles Rollin). Superior Mississippian in western Missouri and Arkansas.

Am. Geol., vol. xvi, pp. 86–91.

Describes the distribution of the Mississippian series in the Mississippi Valley, and gives lists of fossils collected at different localities, which show that both the upper and lower portions of this series are represented in southwest Missouri.

266 —— Stratigraphy of the Kansas coal measures.

Am. Jour. Sci., 3d ser., vol. 1, pp. 239–243.

Reviews the recently published opinions concerning the Kansas coal measures, describes the deposition of these beds in the western interior basin, and discusses the relations of the coal measure formations of Iowa, Missouri, and Kansas.

267 —— Granitic rocks of Missouri.

Eng. and Mg. Jour., vol. lx, pp. 516–517.

Describes briefly the geographic distribution of granite in Missouri, and gives a classification of granitic rocks.

268 **Klotz** (Otto J.). Experimental application of the phototopographical method of surveying to the Baird Glacier, Alaska.

Jour. of Geol., vol. iii, pp. 512–518.

Describes the methods employed, the general features of Baird Glacier, and the results that can be obtained in studying the motions of glaciers by this method.

269 **Knight** (Wilbur C.). Coals and coal measures of Wyoming.

U. S. Geol. Surv., 16th Ann. Rept., part iv, pp. 208–215.

Gives notes on the occurrence of coal in the Cretaceous strata of Wyoming in a paper, by E. W. Parker, on the "Production of coal in 1894."

270 **Knowlton** (F. H.). A review of the fossil flora of Alaska, with descriptions of new species.

U. S. Nat. Mus., Proc., vol. xvii, pp. 207–240, pls. ix.

Gives a historical review of papers on the fossil flora of Alaska, a systematic enumeration of species, with descriptions of a few new species and of others previously described, and a table showing the geologic and geographic distribution of the fossil flora of Alaska, with an explanation and discussion of the table and the age of the plant-bearing beds.

271 —— Notes on the examination of a collection of inter-Glacial woods from Muir Glacier, Alaska.

Jour. of Geol., vol. iii, pp. 527–532.

Gives a list of the inter-Glacial woods, with brief megascopic descriptions.

272 —— Report upon a small collection of fossil plants from Black Hills, near Belvidere, Kansas, collected by Prof. R. T. Hill in August, 1894.

Am. Jour. Sci., 3d ser., vol. 1, pp. 212–214.

Includes brief notes on the species collected.

273 —— Report on a small collection of fossil plants from Poverty Hill and Monte Cristo mine on Spanish Peak, California, submitted by H. W. Turner, January, 1895.

Am. Geol., vol. xv, pp. 377–378.

Gives a brief report on the material and a list of the species determined.

274 **Knowlton** (F. H.) Report on a small collection of fossil plants from Old Port Caddo landing, on Little Cypress Bayou, Harrison County, Tex., made by Mr. T. Wayland Vaughan.

Am. Geol., vol. xvi, pp. 308–309.

Gives a list of the species determined and states briefly their relation to the flora of the so-called eo-lignitic beds.

275 —— Description of a new problematical plant from the Lower Cretaceous of Arkansas.

Torrey Bot. Club, Bull., vol. xxii, pp. 387–390.

Describes and figures Paleohillia arkansana n. gen. et sp.

276 **Kümmel** (Henry B.). Some meandering rivers of Wisconsin.

Science, new ser., vol. i, pp. 714–716.

Describes the geologic and physiographic features of Lafayette and Grant counties and their effect on the drainage systems of the region.

277 —— Review of "Reconstruction of the Antillean continent," by J. W. Spencer.

Jour. of Geol., vol. iii, pp. 364–368.

278 —— **Salisbury** (R. D.) and. Lake Passaic—an extinct glacial lake.

Jour. of Geol., vol. iii, pp. 533–560.

See Salisbury (R. D.) and Kümmel (H. B.), No. 414.

279 **Kunz** (George Frederick). Precious stones.

U. S. Geol. Surv., 16th Ann. Rept., part iv, pp. 595–605.

Notes on the occurrence of diamonds in Wisconsin and California, rubies in North Carolina, sapphires in Montana, emeralds in the Carolinas, beryl in Maine, quartz gems in Pennsylvania, North Carolina, California, Wyoming, and Arizona, and utahlite, opal, and hyalite from Utah.

L.

280 **Lakes** (A.). Fossilized big trees, California.

Sci. Am. Suppl., vol. xxxix, p. 15862.

Describes the occurrence of fossil trees in Cretaceous and Tertiary strata of California.

281 **Lane** (Alfred C.). A connection between the chemical and optical properties of amphiboles.

Abstract: Geol. Soc. Am., Bull., vol. vi, p. 3 (¼ p.).

Gives brief statement of the law which seems to apply to all hornblendes.

282 —— Crystallized slags from copper smelting.

Abstract: Geol. Soc. Am., Bull., vol. vi, pp. 469–470.

Describes crystals of melilite occurring in these slags.

283 —— The bowels of the earth.

Pop. Sci. Monthly, vol. xlvii, pp. 302–313.

Comprises a discussion of the phenomena of volcanoes and earthquakes and of the condition of the earth's interior.

284 **Laur** (Frank). The bauxites: A study of a new mineralogical family.

Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 234–242.

Discusses the mineralogic and chemical characters of bauxite.

285 **Lawson** (Andrew C.). Sketch of the geology of the San Francisco peninsula [California].

U. S. Geol. Surv., 15th Ann. Rept., pp. 399–476, pls. v–xii.

Describes the petrographic character and geologic relations of the Montara granite, the distribution and character of the Franciscan series, of Mesozoic age, the occurrence of serpentine, and the petrographic character and distribution of the Pliocene and Pleistocene formations. Discusses the dynamic phenomena of the region.

286 —— On malignite, a family of basic plutonic orthoclase rocks rich in alkalies and lime, intrusive in the Coutchiching schists of Poohbah Lake [Ontario].

Univ. of Cal., Dept. of Geol., Bull., vol. i, pp. 337–362.

Describes the field relations of the rocks occurring in the Province of Ontario and their petrographic characteristics.

287 —— A contribution to the geology of the Coast ranges.

Am. Geol., vol. xv, pp. 342–356.

The region described is mainly that of the San Francisco peninsula. Describes the relations and succession of the granitic, sedimentary and volcanic series. Reviews the paleontologic evidences as to the age of the sedimentary rocks and describes the geologic structure of the region, and the post-Pliocene diastrophism.

288 **Le Conte** (Joseph). Critical periods in the history of the earth.

Univ. of Cal., Dept. of Geol., Bull., vol. i, pp. 313–336.

Describes the character of the Glacial, post-Cretaceous, post-Paleozoic and pre-Cambrian revolutions and the general laws of the evolution of the organic kingdom and the suddenness of changes and rarity of transitional forms.

289 —— [The genesis of ore deposits.]

Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 996–1006.

Discusses paper by F. Posepny on the same subject.

290 **Leonhard** (A. G.). Origin of the Iowa lead and zinc deposits.

Am. Geol., vol. xvi, pp 288–294.

Describes the occurrence and mode of deposition of these deposits and reviews the various theories as to their origin.

291 —— Lansing lead mines [Iowa].

Iowa Acad. Sci., Proc., vol. ii, pp. 36–38.

Describes the occurrence of lead ore in the Oneota limestone.

292 **Lesley** (J. P.), **D'Invilliers** (E. V.), and **Smith** (A. D. W.). [Carboniferous formation, Pennsylvania.]

Pa. Geol. Surv., Final Rept., vol. iii, part i, pp. 1629–2152, pls. 205–395.

Describes the characters and distribution of the Carboniferous formation in Pennsylvania, giving vertical sections of many localities and coal mines, and names and figures many fossils.

293 **Lesquereux** (Leo). Cretaceous fossil plants from Minnesota.

Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. iii, part i, pp. 1–22, pls. A and B.

Gives a sketch of the geologic range of plant remains, and describes the plant remains of the Cretaceous of Minnesota.

294 **Leverett** (Frank). On the correlation of New York moraines with raised beaches of Lake Erie.

Am. Jour. Sci., 3d ser., vol. l, pp. 1–20.

Presents a map of western New York showing the distribution of the moraines. Describes the Sheridan and Crittenden beaches and their probable correlative moraines in New York, and the character of the country inside (northeast of) the Lockport moraine.

295 —— Pre-Glacial valleys of the Mississippi and tributaries.

Jour. of Geol., vol. iii, pp. 740–763.

Describes the courses of the main pre-Glacial drainage lines of the northern portion of the Mississippi basin, compares the elevation and slope of the pre-Glacial valley floors, and discusses the age and development of the pre-Glacial valleys.

296 **Lindgren** (Waldemar). Characteristic features of California gold-quartz veins.

Geol. Soc. Am., Bull., vol. vi, pp. 221–240, pl. 11.

Describes the geographic distribution, geologic relations, and age of the gold-quartz veins in California. Discusses the structural relations of the veins and describes the association of minerals, the distribution of the gold and the alteration of the country rock. Includes a discussion of the origin of gold and a summary of conclusions. Accompanied by a map of California showing the location of the gold-quartz veins.

297 —— and **Turner** (H. W.). Marysville folio, California.

U. S. Geol. Surv., Geol. Atlas of the U. S., folio 17.

Describes the topography of the region, the characters of the Pleistocene deposits and of the igneous rocks of Marysville buttes and the occurrence of gold-bearing gravels, coal, and natural gas. Includes topographic, colored areal geologic, economic geologic, and structure section maps.

298 —— Smartsville folio, California.

U. S. Geol. Surv., Geol. Atlas of the U. S., folio 18.

Gives a general description of the gold belt of California and a generalized columnar section of the formations of the region. Describes its topographic features, the character and distribution of the Carboniferous rocks and of the igneous rocks, including porphyrite, diabase, granodiorite, gabbrodiorite, and amphibolite, and discusses the age of the igneous rocks. Describes the Neocene and Pleistocene formations, the associated flows of rhyolite and andesite, and the occurrence of auriferous gravels, gold quartz veins, copper, quicksilver, iron, building stone, and soils. Includes topographic, colored areal geologic, economic geologic, and structure section maps.

299 **Lonsdale** (Elston Holmes). Geology of Montgomery County [Iowa].

Iowa Geol. Surv., vol. iv., 3d Ann. Rept., pp. 385–451, pls. x–xi, figs. 46–54, with geologic map.

Describes the physiography of the county and the distribution, stratigraphy, and lithology of the Carboniferous, Cretaceous, and Pleistocene formations. Gives sections of typical localities, and describes the occurrence of building stone, clay, coal, road materials, soils, and water supply.

300 **Lonsdale** (Elston Holmes). Cement materials in Iowa.

Abstracts: Iowa Acad. Sci., Proc., vol. ii, pp. 172–174; Eng. and Mg. Jour., vol. ix, p. 153.

Contains brief remarks on certain deposits in Iowa.

301 —— Upper Carboniferous of southwestern Iowa.

Iowa Acad. Sci., Proc., vol. ii, pp. 197–200.

Reviews previous descriptions of these beds and describes their character and thickness.

302 **Luquer** (L. McI.) and **Volckening** (G. J.). On three new analyses of sodalite from three new localities [Ontario].

Am. Jour. Sci., 3d ser., vol. xlix, pp. 465–466.

Describes the occurrence and chemical composition of sodalite from Ontario, Canada, Ural Mountains, Asia, and the Congo State, Africa.

303 **Lyman** (Benjamin Smith). Report on the New Red of Bucks and Montgomery counties [Pennsylvania].

Pa. Geol. Surv., Final Rept., vol. iii, part 2, pp. 2589–2638, pls. 596–611.

Describes the occurrence, distribution, and structure of the formation in eastern Pennsylvania and discusses its occurrence in other portions of the Middle and Southern Atlantic States, and in New England.

304 —— The Yardley fault [Pennsylvania].

Am. Phil. Soc., Proc., vol. xxxiv, pp. 381–384, pl. x.

Refers to a previous description of the fault by Prof. H. Carvill Lewis. Describes the phenomena connected with the fault and discusses the evidence as to the extent and direction of the downthrow.

305 —— The Chalfont fault rock, so called.

Am. Phil. Soc., Proc., vol. xxxiv, pp. 384–388, pls, xi–xii.

Quotes from a previous description of the fault phenomena at Chalfont, Bucks County, Pa., by Prof. H. Carvill Lewis. Describes the dips and cleavage planes of the strata as shown in two plates.

M.

306 **McCalley** (Henry). Alabama barite or heavy spar.

Ala. Ind. and Sci. Soc., Proc., vol. v, pp. 25–29.

Describes its occurrence in Silurian rocks of Alabama, and the production in the various mines of the United States.

307 **McGee** (W J). The extension of uniformitarianism to deformation.

Geol. Soc. Am., Bull., vol. vi, pp. 55–70.

Describes the movements of the earth's crust and the evidences by which they are detected, the methods of acquiring this knowledge, and the progress of knowledge of the earth's crust. Discusses the origin of these movements.

308 —— A miniature extinct volcano.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xliii, pp. 225–226.

Gives a brief description of a soda lake in central Nevada and its lacustral history.

309 **McKellar** (Peter). The silver mines of Thunder Bay [Ontario].

Abstract: Eng. and Mg. Jour., vol. lix, p. 391.

Describes the occurrence of silver at Thunder Bay and discusses the origin of the deposits.

310 **Marbut** (C. F.). The geographic development of Crowleys Ridge [Arkansas and Missouri].

Boston Soc. Nat. Hist., Proc., vol. xxvi, pp. 479–488, figs. 1–3.

Describes the geographic extent of the ridge and the results of stream erosion, and discusses the origin of the ridge.

311 **Marsh** (O. C.). The Reptilia of the Baptanodon beds.

Am. Jour. Sci., 3d ser., vol. 1, pp. 405–406.

Describes the occurrence of species of Baptanodon in Utah, Oregon, and Wyoming.

312 —— On the affinities and classification of the dinosaurian reptiles.

Am. Jour. Sci., 3d ser., vol. 1, pp. 483–498.

Abstract of paper read before the International Congress of Zoologists, 1895. Discusses the affinities and the classification of Dinosauria, adopted by the author.

313 —— Restoration of some European dinosaurs, with suggestions as to their place among the Reptilia.

Brit. Assoc. Adv. Sci., Rept. for 1895, pp. 685–688.

Gives a brief comparison of some European and North American dinosaurs.

314 **Marsters** (Vernon F.). Camptonite dikes near Danbyborough, Vt.

Am. Geol., vol. xv, pp. 368–371.

Describes the characters of the dike rock and the manner in which it differs from the type rock at Campton Falls, N. H. Gives a list of the localities where camptonite dikes are known to occur.

315 —— Camptonites and other intrusives of Lake Memphremagog [Quebec].

Am. Geol., vol. xvi, pp. 25–39, with map.

Gives a brief description of the geologic features of the vicinity of Lake Memphremagog. Describes the granite, lamprophyre, monchiquite, and fourchite dikes, the microscopic characters of the dike rocks, and gives a summary of the literature of the occurrence of these dikes.

316 **Matthew** (George F.). On the organic remains of the Little River group, No. II.

Roy. Soc. of Canada, Proc. and Trans., vol. xii, sect. iv, pp. 89–100.

Quotes the author's description of the post-Cambrian beds of the region from a previous paper and describes the lithologic character and succession of the beds of this group. Describes a new species of insect, a new scorpion, and a new land snail from these beds.

317 —— On the organic remains of the Little River group, No. III.

Roy. Soc. of Canada, Proc. and Trans., vol. xii, sect. iv, pp. 101–110.

Presents a table of the genera of the pre-Carboniferous land flora of northeastern North America, showing their geologic distribution, and discusses their bearing on the age of the Little River beds. Gives a sketch of the literature of fossil myriapods and describes five new species from the Little River group.

318 —— Early Protozoa.

Am. Geol., vol. xv, pp. 146–153.

Discusses the occurrence of early Protozoa in pre-Cambrian rocks, and reviews a paper by L. Cayeux on the Protozoa of the pre-Cambrian of Brittany.

319 **Matthew** (George F.). The Protolenus fauna.

N. Y. Acad. Sci., Trans., vol. xiv, pp. 101-153, pls. i-xi.

Abstract: Science, new ser., vol. i, pp. 452-453.

Describes the relations of the different faunas of the Cambrian rocks of New Brunswick and Newfoundland, and the specific characters of the Protolenus fauna, including a number of new species.

320 —— Two new Cambrian graptolites with notes on other species of Graptolitidæ of that age.

N. Y. Acad. Sci., Trans., vol. xiv, pp. 262-273, pls. xlviii-xlix.

Describes several species of graptolites occurring in the Cambrian rocks near St. John, New Brunswick.

321 **M[atthew]** (G. F.). Report on the summer camp at French Lake [New Brunswick].

New Brunswick Nat. Hist. Soc., Bull., No. xiii, pp. 84-88.

Describes the physiography of this region in south central New Brunswick.

322 —— Report on the summer camp at Lepreau basin [New Brunswick].

New Brunswick Nat. Hist. Soc., Bull., No. xiii, pp. 88-93.

Describes briefly the geologic structure of this vicinity in southern New Brunswick, and gives a summary of its geologic history.

323 —— Report on geology.

New Brunswick Nat. Hist. Soc., Bull., No. xiii, pp. 94-95.

Gives a brief statement regarding the classification of brachiopods and of the occurrence of primitive types in the St. John group, and describes and figures Trematobolus insignis.

324 **Matthew** (W. D.). The effusive and dike rocks near St. John, N. B.

N. Y. Acad. Sci., Trans., vol. xiv, pp. 187-218, pls. xii-xvii.

Presents a bibliography of the literature, describes the distribution of the pre-Cambrian volcanics along the eastern coast of North America, and reviews the classification of pre-Cambrian in New Brunswick. Describes the petrographic characters of quartz-porphyry, felsite-porphyry, diabase, soda-granite, diorite-porphyrite, and augite-porphyrite.

325 —— Monazite and orthoclase from South Lynne, Connnecticut.

School of Mines Quart., vol. xvi, pp. 231-233.

Describes and figures the crystallographic characters of the minerals named.

326 —— The volcanic rocks of the maritime provinces of Canada.

New Brunswick Nat. Hist. Soc., Bull., No. xiii, pp. 76-83.

Gives a brief description of the geologic history of New Brunswick and of the character and distribution of the volcanic rocks of Nova Scotia and New Brunswick.

327 **Matthews** (Edward B.). The granites of Pikes Peak, Colorado.

Geol. Soc. Am., Bull., vol. vi, pp. 471-473.

Describes several types of granite from the Pikes Peak region and discusses the genetic sequence.

328 **Mead** (Daniel W.). Notes on the hydro-geology of Illinois in relation to its water supplies.

Ill. Soc. Eng. and Surveyors, 8th Ann. Rept., 1893.

Describes the geologic features of the State and its drainage systems, and gives sections showing the character of the strata and tables of physical data of artesian wells. Contains geologic maps of Illinois and of northern Illinois and southern Wisconsin and a cross section.

329 —— The hydro-geology of the Upper Mississippi Valley and some of the adjoining territory.

Assoc. of Eng. Societies, Jour., vol. xiii, No. 7, 1894, 68 pp.

Gives tables showing the amount of rainfall and rate of evaporation in various parts of the region and a general summary of the geology, with vertical sections displayed in certain wells. Discusses the glacial deposits and presents a number of tables giving physical data of artesian and deep wells in the Upper Mississippi Valley. The paper contains six maps.

330 —— The geology of Wisconsin water supplies.

Paper read before the convention of American Waterworks Association at Milwaukee, Wis., September 5-9, 1893. Author's edition, Rockford, Ill.

Describes the general geologic features of Wisconsin in relation to the water supply and gives data regarding the artesian and deep wells. The paper contains a geologic map of the State.

331 —— Geological map and table of economic resources of Illinois.

Author's edition, Rockford, Ill.

Presents a geologic map of Illinois and tables showing the analysis of Illinois limestones and clays and the economic resources with geologic strata and geographic locality where found.

332 **Meadows** (Thomas C.) and **Brown** (Lytle). The phosphates of Tennessee.

Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 582-594.

Gives a historical sketch of phosphate mining and a map of the region. Describes the occurrence of phosphatic material at various localities and the general geology of the district. Discusses the origin of the material.

333 **Mercer** (Henry C.). A preliminary account of the reexploration in 1894 and 1895 of the "Bone Hole," now known as Irwin's Cave, at Port Kennedy, Montgomery County, Pennsylvania.

Phila. Acad. Nat. Sci., Proc. 1895, pp. 443-446.

Describes the occurrence of fossil vertebrates and plants in this cave.

334 **Merriam** (John C.). On some reptilian remains from the Triassic of northern California.

Am. Jour. Sci., 3d ser., vol. l, pp. 55-57.

The remains consist of vertebræ and fragments of ribs and were obtained from the black bituminous limestones of the Trias in Shasta County, Cal. Their systematic position is within the old order Enaliosauria. Proposes the new generic and specific name Shastasaurus pacificus for one of the skeletons.

336 **Merriam** (John C.). Sigmogomphius lecontei, a new castoroid rodent from the Pliocene, near Berkeley, Cal.

Univ. of Cal., Dept. of Geol., Bull., vol. i, pp. 363–370.

Gives a history of Castoridæ, a description of the fossil remains collected, and a comparison with other castoroid genera, and describes their geologic and geographic distribution.

336 **Merrill** (Frederick J. H.). The geology of natural scenery.

Pop. Sci. Monthly, vol. xlvi, pp. 240–244.

Describes geologic phenomena in New York and in portions of Europe.

337 —— The geology of Moriah and Westport townships, Essex County, N. Y.

See Kemp (J. F.), No. 245.

338 —— Clay industries of New York.

See Ries (H.), No. 398.

339 **Merrill** (George P.). The onyx marbles: their origin, composition, and uses, both ancient and modern.

U. S. Nat. Mus., Rept. for 1893, pp. 539–585, pls. 1–18.

Discusses its origin, mode of occurrence, and chemical and physical properties, and describes its occurrence in Arizona, California, eastern Appalachian region, Colorado, Utah, New Mexico, Mexico, and in foreign countries.

340 —— On the formation of stalactites and gypsum incrustations in caves.

U. S. Nat. Mus., Proc., vol. xvii, pp. 77–81, pls. ii–v.

Describes the formation of stalactites and incrustations in Wyandotte Cave, Indiana, Luray Caves, Virginia, and the Mammoth Cave, Kentucky.

341 —— The formation of sandstone concretions.

U. S. Nat. Mus., Proc., vol. xvii, pp. 87–88, pl. vi.

Describes the formation of nodular masses of siliceous sand and iron disulphide in the Potomac division of the Cretaceous in the District of Columbia.

342 —— Notes on some eruptive rocks from Gallatin, Jefferson, and Madison counties, Montana.

U. S. Nat. Mus., Proc., vol. xvii, pp. 637–673.

Describes the petrographic characters of the following rock types in this region: Enstatite andesite, basalt ? (with chemical analysis), augite andesite, hornblende andesite, lamprophyr, porphyrite ? (with chemical analysis), hypersthene andesite (with chemical analysis), diorite rhyolite, andesite, hornblende picrite (with chemical analysis), saxonite (harzburgite) (with chemical analysis), pyroxenite (with chemical analysis), diabase, liparite, pyroxenite (websterite) (with chemical analysis), diorite porphyrite, quartzose hornblende porphyrite (with chemical analysis), and lamprophyres (with chemical analyses).

343 —— Disintegration of the granitic rocks of the District of Columbia.

Geol. Soc. Am., Bull., vol. vi, pp. 321–332, pl. 16.

Describes the character of the rock and the extent of the disintegration of a particular locality and gives chemical analyses of the fresh rock, of that partially decomposed, and of the soil. Gives analyses of material separated by solvents and also mechanically separated. Discusses the conditions affecting the results and compares them with analyses of material from other localities. Discusses the evidence of the time limit and causes of the disintegration.

344 **Merritt** (William Hamilton). [Nickel deposits at Sudbury, Ontario.]

Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 755–756.

Discussion of paper by S. F. Emmons on the "Geological distribution of the useful metals in the United States."

345 **Miller** (Arthur M.). High level gravel and loam deposits of Kentucky rivers.

Am. Geol., vol. xvi, pp. 281–287.

Discusses the evidences of a former flooded condition of some of the Kentucky rivers and the possibility of the terminal moraine having blocked the mouths of the Kentucky and Licking rivers. Presents a map of northeastern Kentucky.

346 **Miller** (S. A.) and **Gurley** (William F. E.). New and interesting species of Paleozoic fossils.

Ill. State Mus. Nat. Hist., Bull., No. 7, pp. 89, pls. i–v.

Describes new species of fossils from the Carboniferous of Missouri, the Devonian of Indiana, and the Silurian of Tennessee and Indiana.

347 **Montgomery** (Henry). Volcanic dust in Utah and Colorado.

Science, new ser., vol. i, pp. 656–657 (correspondence).

Describes deposits of volcanic dust occurring in the Oquirrh and Wasatch mountains, Utah, and in the Green River region of northwestern Colorado.

348 **Moses** (Alfred J.). Contributions from the mineralogical department of Columbia College.

School of Mines Quart., vol. xvi, pp. 226–231.

Describes the crystallographic characters of zincite, atacamite from Arizona, enargite from Montana, and hollow pseudomorphs of quartz after an unknown mineral from New Jersey.

349 **Mudge** (E. H.). Central Michigan and the post-Glacial submergence.

Am. Jour. Sci., 3d ser., vol. l, pp. 442–445.

Describes the character of the erosion of central Michigan and discusses the evidences which indicate that this depression is an unfilled portion of a much deeper valley, eroded in pre-Glacial time. Discusses the theory of a submergence of the Great Lakes during the Glacial period.

N.

350 **Nason** (Frank L.). The franklinite deposits of Mine Hill, Sussex County, New Jersey.

Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 121–130.

Describes recent operations with the diamond drill and the evidence obtained as to the position and extent of the ore body.

351 —— The geological structure of the Ringwood iron mines, New Jersey.

Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 505–521.

Describes the position of the ore bodies and discusses their geologic structure.

352 **Nason** (Frank L.). The Goler gold diggings [California].

Eng. and Mg. Jour., vol. lix, p. 223.

Describes the occurrence of gold placers on the western edge of the Mojave desert, California.

353 **Newell** (Frederick Haynes). The public lands and their water supply.

U. S. Geol. Surv., 16th Ann. Rept., part ii, pp. 457–533, pls. xxxv–xxxix, figs. 48–57.

Describes the character of the public lands of the Western States and their water supply.

354 **Nitze** (H. B. C.). Monazite.

U. S. Geol. Surv., 16th Ann. Rept., part iv, pp. 667–693.

Reviews the history and nomenclature of this mineral, describes its crystallographic and chemical characters, and gives a table showing its geographic and geologic occurrence. Includes a bibliography.

355 **Norton** (William Harmon) Certain Devonian and Carboniferous outliers in eastern Iowa.

Iowa Geol. Surv., vol. iii, 2d Ann. Rept., pp. 115–133.

Mentions the localities where these outliers are known to occur and the fossils that have been found in them.

356 —— Thickness of the Paleozoic strata of northeastern Iowa.

Iowa Geol. Surv., vol. iii, 2d Ann. Rept., pp. 169–210, pls. xvii–xviii.

Gives the thickness of the different Paleozoic formations at various localities in Iowa and the vertical sections displayed by several deep well borings.

357 —— Geology of Linn County [Iowa].

Iowa Geol. Surv., vol. iv, 3d Ann. Rept., pp. 125–195, pls. ii–v, figs. 13–18, with geologic map.

Describes the topography and drainage of the area and the distribution and lithologic character of the Upper Silurian, Devonian, and Pleistocene beds, and an outlier of Carboniferous strata. Gives vertical sections at various localities and describes the occurrence of building stones, clay, and lime.

358 —— Occurrence of Megalomus canadensis Hall in the Le Claire beds at Port Byron, Illinois.

Iowa Acad. Sci., Proc., vol. ii, pp. 42–43 (½ p.).

Contains brief notes on the occurrence of the fossil at this locality.

359 —— Geological section of the Y. M. C. A. artesian well at Cedar Rapids, Iowa.

Iowa Acad. Sci., Proc., vol. ii, pp. 194–196.

Gives the section of the well to a depth of 1,462 feet and a table showing the thicknesses of the formations penetrated.

O.

360 **Olcott** (E. E.). [On the nickel mine at Lancaster Gap, Pennsylvania.]

Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 883–886.

In discussion of paper by J. F. Kemp on the same subject.

361 **Osborn** (Henry Fairchild). Fossil mammals of the Uinta Basin. Expedition of 1894.

Am. Mus. Nat. Hist., Bull., vol. vii, pp. 71–106, figs. 1–17.

Gives a description of the occurrence of the fossils and the character of the formations in the Uinta Basin, in northeastern Utah, by Mr. O. A. Peterson. In a table shows the succession of species in the three faunal levels and describes the fossils collected, including several new species.

362 —— and **Earle** (Charles). Fossil mammals of the Puerco beds.

Am. Mus. Nat. Hist., Bull., vol. vii, pp. 1–70, figs. 1–21.

The fossils described were found in the San Juan region of New Mexico. Quotes from Dr. Wortman's field notes describing their occurrence. Gives in tabular form a synopsis and vertical distribution of the Puerco fauna, and describes the characters of the fossils collected, including a number of new species.

363 —— and **Wortman** (J. L.). Perissodactyls of the Lower Miocene White River beds [South Dakota].

Am. Mus. Nat. Hist., Bull., vol. vii, pp. 343–375, pls. viii–xi, figs. 1–12.

Gives a list of the species described and the lithologic character and thickness of the beds in which they were found. Describes the fossils collected, including a number of new species.

P.

364 **Packard** (R. L.). Note on a blue mineral, supposed to be ultramarine, from Silver City, New Mexico.

U. S. Nat. Mus., Proc., vol. xvii, pp. 19–20.

Gives a brief description of its occurrence and a chemical analysis of the material.

365 —— On an occurrence of copper in western Idaho.

Am. Jour. Sci., 3d ser., vol. l, pp. 298–300.

Describes the occurrence of copper in the mountains separating Oregon from Idaho and the petrographic and chemical characters of the diorite with which it is associated.

366 **Penfield** (S. L.). Partial report on calaverite crystals from Cripple Creek, Colorado.

U. S. Geol. Surv., 16th Ann. Rept., part ii, pp. 135–136.

Describes the crystallographic characters of the material examined.

367 **Penrose** (R. A. F., jr.). Geology and mining industries of the Cripple Creek district, Colorado, Part II. Mining geology of the Cripple Creek district, Colorado.

U. S. Geol. Surv., 16th Ann. Rept., part ii, pp, 111–209, pls. iii–xiv, figs. 2–37, with supplemental map of the Cripple Creek district.

Gives a historical account of mining at Cripple Creek. Describes the mineralogic character and superficial alteration of the gold ores. Discusses the mode of occurrence and deposition of the ores. Chapters V and VI contain detailed descriptions of the mines. Contains a discussion of the chemical characters of calaverite by W. F. Hillebrand and of its crystallographic characters by S. L. Penfield.

368 **Penrose** (R. A. F., jr.), and **Iddings** (J. P.). Review of the "Penokee iron-bearing series of Michigan and Wisconsin," by R. D. Irving and C. R. Van Hise.

Jour. of Geol., vol. iii, pp. 221-227.

369 —— and **Quereau** (E. C.) Review of "Vol. VII. Geological Survey of Ohio."

Jour. of Geol., vol. iii, pp. 353-357.

370 **Perrine** (Charles D.). Earthquakes in California in 1894.

U. S. Geol. Surv., Bull. No. 129, 23 pp.

Includes a chronologic record of earthquakes occurring on the Pacific Coast in 1894.

371 **Phillips** (William B.), Coal in western North Carolina.

Eng. and Mg. Jour., vol. lx, pp. 612-613.

Describes the occurrence of coal in rocks of possible Cambrian age.

372 **Pirsson** (Louis V.). Complementary rock and radial dikes.

Am. Jour. Sci., 3d ser., vol. l, pp. 116-121.

Describes the smaller bodies, usually dikes and sheets, which frequently accompany large intrusions of massive igneous rocks, which are in part more basic and in part more acid than the main bodies. Such rocks are known as complementary rocks. Discusses the use of the term lamprophyre for the basic type, and suggests the term oxyphyre for the acid type. Considers that radial dikes around an eruptive center are usually of later formation, and are most typical in areas of undisturbed, homogeneous, and sedimentary strata; further, that normally oxyphyres most commonly cut the central stock and lamprophyres the outer zone of sedimentaries.

373 —— On some phonolitic rocks from Montana.

Am. Jour. Sci., 3d ser., vol. l, pp. 394-399.

Describes the megascopic and microscopic characters of pseudo-leucite sodalite-tinguaite, and quartz-tinguaite porphyry.

374 —— **Weed** (W. H.) and. On the igneous rocks of the Sweet Grass Hills, Montana.

Am. Jour. Sci., 3d ser., vol. l, pp. 309-313.

See Weed (W. H.) and Pirsson (L. V.), No. 523.

375 —— Igneous rocks of Yogo Peak, Montana.

Am. Jour. Sci., 3d ser., vol. l, pp. 467-479.

See Weed (W. H.) and Pirsson (L. V.) No. 524.

376 —— Highwood Mountains of Montana.

Geol. Soc. Am., Bull., vol. vi, pp. 389-422, pls. 24-26.

See Weed (W. H.) and Pirsson (L. V.) No. 522.

377 **Posepny** (F.). [The genesis of ore deposits.]

Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 962-980.

Reviews discussions of a former paper by the author on the same subject.

378 **Prest** (W. H.). Deep mining in Nova Scotia.

Nova Scotian Inst. of Sci., Proc. and Trans., vol. viii, pp. 420–434.

Gives a general vertical section of the Cambrian rocks of eastern Nova Scotia and discusses their geologic age. Describes the folding, mineralization, and denudation of these rocks. Remarks on the classification of the gold mines, and discusses the probabilities of deep mining.

379 **Prosser** (Charles S.). The classification of the Upper Paleozoic rocks of central Kansas.

Jour. of Geol., vol. iii, pp. 682–705 and 764–800.

Describes the topographic features of the region and the lithologic character and fauna of the Permian and Permo-Carboniferous rocks, and reviews previous descriptions of the geology of Kansas. Presents a table showing the stratigraphic position and character of the formations comprising the Upper Paleozoic of central Kansas.

380 —— Kansas River section of the Permo-Carboniferous and Permian rocks of Kansas.

Geol. Soc. Am., Bull., vol. vi, pp. 29–54.

Reviews the work of Meek and Hayden and Professor Swallow in this region. Describes the sections at Manhattan, the Mill Creek section, and that of the upper Kansas River, giving lists of fossils collected and comparing the faunas of some of the beds. Presents a "chart giving tabulated sections of the rocks exposed along the Kansas River southwest of Manhattan, as described by Meek and Hayden, Swallow and Hay."

Q.

381 **Quereau** (E. C.), **Penrose** (R. A. F., jr.), and. Review of "Geology, vol. vii, Geological Survey of Ohio."

Jour. of Geol., vol. iii, pp. 353–357.

382 **Quille** (Dan de). The gold belts of Nevada.

Eng. and Mg. Jour., vol. lix, pp. 532–533.

Describes the occurrence of gold at Virginia City and other localities in Nevada.

383 —— Millions in gold beneath the lava flows.

Eng. and Mg. Jour., vol, lx, pp. 537–538.

Discusses the occurrence of gold beneath the lava flows of Idaho and California.

R.

384 **Rand** (Theodore D.). Trap dikes in Chester County, Pennsylvania.

Phila. Acad. Nat. Sci., Proc., 1895, pp. 540–541.

Gives brief notes on the occurrence of trap dikes in this county.

385 **Ransome** (F. Leslie). On lawsonite, a new rock-forming mineral from the Tiburon peninsula, Marin Co., Cal.

Univ. of Cal., Dept. of Geol., Bull., vol. i, No. 10, pp. 301–312, pl. 17.

Describes the optical, crystallographic, chemical, and physical characters of lawsonite, with notes on the associated minerals.

386 **Rauff** (Hermann). Palæospongiologie.

Palæontographica, Band xli, pp. 223–272, pls. xx–xxvi, figs. 76–124.

Describes new species of fossil sponges from the Niagara rocks of Tennessee and one from the Trenton of Manitoba.

387 **Rauff** (Hermann). Ueber Porocystis pruniformis Cragin (= ? Araucarites wardi Hill) aus der unteren Kreide in Texas.
Neues Jahr. für Min., etc., 1895, Band i, pp. 1-15.
Describes the characters of the fossil, and reviews the descriptions of Messrs. Hill and Cragin.

388 **Raymond** (R. W.). [The torsional theory of joints.]
Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 864-865.
In discussion of paper by G. F. Becker on the same subject.

389 —— [Pyrrhotite deposits at Anthonys Nose, New York].
Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 886-888.
In discussion of paper by J. F. Kemp on "The nickel mine at Lancaster Gap, Pennsylvania, and the pyrrhotite deposits at Anthonys Nose on the Hudson."

390 —— [The classification of ore deposits.]
Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 956-957.
Remarks on a classification of ore deposits presented in T. A. Rickard's discussion of a paper on the "Genesis of ore deposits," by F. Posepny.

391 —— [The genesis of ore deposits.]
Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 980-995.
In discussion of paper by F. Posepny on the same subject.

392 **R[aymond** (R. W.).] The superficial alteration of ore deposits.
Eng. and Mg. Jour., vol. lix, p. 328.
Reviews paper by R. A. F. Penrose, jr., on the same subject.

393 **Reid** (Harry Fielding). The variations of glaciers.
Jour. of Geol., vol. iii, pp. 269-288.
Abstract: Geol. Soc. Am., Bull., vol. vi, pp. 461-462 (½ p).
Discusses the causes of variations in glaciers, and describes the observations that should be made in studying glacial phenomena.

394 **Rhoads** (Samuel N.). Distribution of the American bison in Pennsylvania, with remarks on a new fossil species.
Phila. Acad. Nat. Sci., Proc., 1895, pp. 244-248.
Remarks on the former occurrence of the American bison in Pennsylvania, and describes a new species, Bison appalachicolus.

395 **Rickard** (T. A.). [The genesis of ore deposits.]
Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 942-956.
In discussion of paper by F. Posepny on the same subject, presents the author's classification of ore bodies, and discusses phenomena observed in mines in Colorado and Arizona.

396 —— Porphyry.
Eng. and Mg. Jour., vol. lix, p. 578.
Discusses the characters of porphyries and their occurrence in different mining regions.

397 —— Variations in the milling of gold ores, xii. The Black Hills, South Dakota.
Eng. and Mg. Jour., vol. lx, pp. 221-223 and 247-251.
Describes briefly some of the ore bodies of the Black Hills.

398 **Ries** (Heinrich). Clay industries of New York.

N. Y. State Mus., Bull., vol. iii, No. 12, 262 pp.

Describes the occurrence of clay deposits in Quaternary, Tertiary, and Cretaceous strata of the State. Gives a list and figures of diatoms found in Cretaceous beds, and includes an account of the clay industries and a map of the State, showing the location of clay deposits and manufactories.

399 —— On a granite-diorite near Harrison, Westchester County, N. Y.

N. Y. Acad. Sci., Trans., vol. xiv, pp. 80–86.

Describes the petrographic characters of a granite-diorite, of a gneissic structure, occurring at the locality named.

400 **Robertson** (James D.). The Missouri lead and zinc deposits.

Am. Geol., vol. xv, pp. 235–248.

Describes the differences between the deposits of the southwestern portion of the State and those of the central and southeastern, the characters of the country rock, and the forms and mode of deposition of the ore bodies. Describes the lead and zinc compounds and accessory minerals. Reviews some of the theories advanced to account for the origin of these deposits, and discusses the evidence in support of the author's hypothesis.

401 —— [Lead and zinc deposits in Missouri.]

See Winslow (A.), No. 564.

402 **Rolker** (Charles M.). The production of tin in various parts of the world.

U. S. Geol. Surv., 16th Ann. Rept., part iii, pp. 458–538.

Includes statistics of production in various countries and notes on the occurrence of tin in Maine, Virginia, North Carolina, Alabama, Texas, South Dakota, and California.

403 **Rowley** (R. R.). Description of a new genus and five new species of fossils from the Devonian and sub-Carboniferous rocks of Missouri.

Am. Geol., vol. xvi, pp. 217–223.

Describes Aristocrinus n. gen. and five new species.

404 **Ruedmann** (R.). Synopsis of the mode of growth and development of the graptolitic genus Diplograptus.

Am. Jour. Sci., 3d ser., vol. xlix, pp. 453–455.

Describes and figures the results of observations made upon a large collection of specimens of Diplograptus found near Dolgeville, N. Y.

405 **Rundall** (W. H.). Quicksilver ores at Guadalcazar, Mexico.

Sci. Am. Suppl., vol. xl, pp. 16289–16290.

Describes the occurrence of quicksilver at this vicinity.

406 **Russell** (Israel C.). Review of "Report on surface geology," by R. D. Salisbury.

Jour. of Geol., vol. iii, pp. 358–364.

407 —— The influence of débris on the flow of glaciers.

Jour. of Geol., vol. iii, pp. 823–832.

Discusses the rate of flow of glaciers as affected by glacial erosion and subglacial deposition, the unconsolidated deposits beneath glaciers, terminal moraines, and the variations of glaciers.

S.

408 **Salisbury** (Rollin D.). Surface geology: Report of Progress [New Jersey].

N. J. Geol. Surv., Rept. for 1894, pp. 1-150, pls. i-iv.

Describes the distribution and character of the drift deposits of the northern portion of New Jersey, the distribution and direction of the glacial striæ, the changes of drainage of lakes and streams, and the lithologic character and succession of certain deposits of Tertiary age. Includes geologic sections and map showing the course of ice movement in the last Glacial epoch.

409 —— Surface formations of southern New Jersey.

Geol. Soc. Am., Bull., vol. vi, pp. 483-488.

Describes the distribution, composition, thickness, and age of the Beacon Hill, Pensauken, and Jamesburg formations, which constitute "the post-Cretaceous surface materials south of the Triassic belt of New Jersey."

410 —— Studies for students. Agencies which transport materials on the earth's surface.

Jour. of Geol., vol. iii, pp. 70-97.

Discusses the evidences of the action of the wind, water, water and ice cooperating, and ice, in transporting materials on the earth's surface.

411 —— [Review of the "Report on the geology of the Coastal Plain of Alabama," by E. A. Smith].

Jour. of Geol., vol. iii, pp. 101-108.

In this review the author discusses the classification and relation of the Lafayette beds.

412 —— Pre-Glacial gravels on the quartzite range near Baraboo, Wis.

Jour. of Geol., vol. iii, pp. 655-667.

Describes the character of these gravel deposits and names the fossils found in the pebbles. Discusses the evidence as to the age of these gravels and their relation to the high-level gravels of adjacent States.

413 —— The Greenland expedition of 1895.

Jour. of Geol., vol. iii, pp. 875-902.

Describes the coastal topography of Greenland in about latitude 64° 30′, and to the north, and the general features of the glacial phenomena. Discusses the evidences of past glaciations drawn from the nature of the rock surfaces and the evidence of recent changes of level.

414 —— and **Kümmel** (H. B.). Lake Passaic—an extinct glacial lake [New Jersey].

Jour. of Geol., vol. iii, pp. 533-560.

Describes the position and character of the lake basin, the existing shore features, its lacustrine deposits, and the different outlets. Discusses the evidences of the various phases of its history.

415 **Sardeson** (F. W.), **Hall** (C. W.) and. The Magnesian series of the Northwestern States.

Geol. Soc. Am., Bull., vol. vi, pp. 167-198, pl. 2.

See Hall (C. W.) and Sardeson (F. W.), No. 183.

416 **Schmitz** (E. J.). The structure of the Richmond coal basin [Virginia].

Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 397–408, figs. 1–13.

Describes the geologic structure of the region, illustrated by cross sections.

417 **Schuchert** (Charles). Dry dredging in the Mississippian Sea.

Science, new ser., vol. ii, pp. 679–681.

Gives an account of collecting fossils from the Devonian rocks of Ontario and Michigan.

418 —— American fossil Brachiopoda.

Science, new ser., vol. ii, pp. 722–724.

Describes a work in preparation by the author entitled "A synopsis of American fossil Brachiopoda, including bibliography and synonymy," and gives a summary of the important results.

419 —— **Winchell** (N. H.) and. Sponges, graptolites, and corals from the Lower Silurian of Minnesota.

Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. iii, part i, pp. 55–95, pls. F and G.

See Winchell (N. H.) and Schuchert (Charles), No. 561.

420 —— The Lower Silurian Brachiopoda of Minnesota.

Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. iii. part i. pp. 333–474, pls. xxix–xxxiv.

See Winchell (N. H.) and Schuchert (Charles), No. 562.

421 **Scott** (W. B.). The osteology and relations of Protoceras.

Jour. of Morph., vol. xi, pp. 303–374, pls. xx–xxii.

Describes the dentition, brain, vertebral column, and limbs of Protoceras, discusses its systematic position, and describes and figures a restoration of Protoceras celer.

422 —— A restoration of Hyænodon.

Geol. Mag., dec. iv, vol. ii, pp. 441–443, pl. xiia.

Describes briefly the characters of Hyænodon cruentus Leidy from the White River beds of South Dakota.

423 —— On the Tertiary lacustrine formations of North America.

Brit. Assoc. Adv. Sci., Rept. 1895, pp. 681–682.

Gives a brief description of the Tertiary lacustrine beds occurring in the Great Plains and Rocky Mountain region.

424 **Scudder** (Samuel H.). The Tertiary Hemiptera of British Columbia.

Canada Geol. Surv., Cont. to Canadian Palæontology, vol. ii, part i, pp. 5–26, pl. i.

Describes fossil insects from the Tertiary strata of British Columbia, including several new genera and species.

425 —— The Coleoptera hitherto found fossil in Canada.

Canada Geol. Surv., Cont. to Canadian Palæontology, vol. ii, part i, pp. 27–56, pls. 2–3.

Describes the characters of Coleoptera found in Pleistocene, Tertiary and Cretaceous strata of various parts of Canada.

426 **Scudder** (Samuel H.). Notes upon myriapods and arachnids found in sigillarian stumps in the Nova Scotia coal field.

Canada Geol. Surv., Cont. to Canadian Palæontology, vol. ii, part i, pp. 57-65, pls. iv-v.

Gives descriptions and figures of several species, including two new ones.

427 —— Revision of the American fossil cockroaches, with description of new forms.

U. S. Geol. Surv., Bull. No. 124, pp. 145, pls. xii.

Gives faunal lists of American cockroaches and tables of distribution, and discusses the characteristics of Mylacridæ. Describes and figures many species, including new species.

428 **Selwyn** (Alfred R. C.). Summary report of the operations of the Geological Survey for the year 1892.

Canada Geol. Surv., Ann. Rept., 1892-93, new ser., vol. vi, Rept. A, 95 pp.

Gives a summary of the reports of the geologists on the work done in British America in 1892.

429 —— Summary report of the operations of the Geological Survey for the year 1893.

Canada Geol. Surv., Ann. Rept., 1892-93, new ser., vol. vi, Rept. A, 98 pp.

Gives a summary of the reports of the geologists of the work done in 1893.

430 **Shaler** (Nathaniel Southgate). Preliminary report on the geology of the common roads of the United States.

U. S. Geol. Surv., 15th Ann. Rept., pp. 259-306.

Gives a historical outline of American roads, describes methods of using stone in road building, the relative value of road stones, their distribution, the action of rain, frost, and wind, the effect of geologic structure on grades of roads, and the sources of supply of road stone in New England, Appalachian region, Atlantic Coastal Plain, Mississippi Valley, Great Lakes region, and Cordilleran region.

431 —— The geology of the road-building stones of Massachusetts, with some consideration of similar materials from other parts of the United States.

U. S. Geol. Surv., 16th Ann. Rept., part ii, pp. 277-341, pls. xviii-xxiv.

Gives an account of the methods of collecting and testing materials employed. Describes the character of road-building materials of glacial origin, in bedded rocks, and dike and vein stones, in Massachusetts. Contains a discussion of topographic conditions affecting road building, a description of the brickmaking clays and road-making gravels, and statistics concerning the resistance to wear of road-building stones.

432 —— Origin, distribution, and commercial value of peat deposits.

U. S. Geol. Surv., 16th Ann. Rept., part iv, pp. 305-314.

Describes the formation of peat and the distribution of peat bogs in the United States.

433 —— [Dislocations of the Cretaceous and Tertiary rocks of Marthas Vineyard, Mass.].

Geol. Soc. Am., Bull., vol. vi, p. 7 (½ p.).

In discussion of paper by Arthur Hollick on "Dislocations in certain portions of the Atlantic Coastal Plain strata and their probable causes," discusses the character of the folds and of the topography which existed when the region was invaded by the ice sheet.

434 **Shaler** (Nathaniel Southgate). Evidences as to the change of sea level.

Geol. Soc. Am., Bull., vol. vi, pp. 141-166.

Gives a synopsis of the author's previous views of the conditions and forces affecting sea level. Describes the agencies deforming shore lines, and discusses the value of criteria indicating higher and lower seashores. Describes the changes in altitudes of portions of North American coasts and also those of other countries.

435 **Sherzer** (W. H.). Native sulphur in Michigan.

Am. Jour. Sci., 3d ser., vol. l, pp. 246-248.

Describes the occurrence of native sulphur in the Upper Helderberg limestone of Monroe County, Mich.

436 **Skewes** (Edward). Cripple Creek, Colorado.

Eng. and Mg. Jour., vol. lix, pp. 103-104 and 151-152.

Describes the occurrence of gold in some of the mines of Cripple Creek, Colo.

437 —— Cripple Creek phonolite dikes, Raven Hill, Colorado.

Eng. and Mg. Jour., vol. lix, p. 583.

Describes the occurrence and character of the dike rock in some of the mines of Cripple Creek.

438 **Smith** (A. D. W.), **Lesley** (J. P.), **D'Invilliers** (E. V.) and. [Carboniferous formation, Pennsylvania.]

Pa. Geol. Surv., Final Rept., vol. iii, part i, pp. 1629-2152, pls. 205-395.

See Lesley (J. P.), D'Invilliers (E. V.) and Smith (A. D. W.), No. 292.

439 **Smith** (Eugene A.). Alabama's resources for the manufacture of Portland cement.

Ala. Ind. and Sci. Soc., Proc., vol. v, pp. 44-51.

Describes the occurrence of the raw materials in the Cretaceous and Tertiary limestones and clays of Alabama.

440 **Smith** (James Perrin). Mesozoic changes in the faunal geography of California.

Jour. of Geol., vol. iii, pp. 369-384.

Describes briefly the relations of the pre-Carboniferous and Carboniferous faunas and the post-Paleozoic revolution. Discusses the relations of the Triassic, Jurassic, and Cretaceous faunas of California, compares them with the Mesozoic faunas of Europe and other portions of western United States, and gives the author's summary of conclusions.

441 —— Studies for students. Geologic study of migration of marine invertebrates.

Jour. of Geol., vol. iii, pp. 481-495.

Reviews recent literature discussing the geographic distribution of faunas in recent and geologic time. Discusses the causes of migration, the influence of land and water barriers and climatic zones in limiting migration, and the criteria by which the occurrence of migration is established.

442 —— The Carboniferous strata of Shasta County, California.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xliii, p. 247 (½ p.).

443 **Smyth** (C. H. jr.). On a basic rock derived from granite.

Abstract: Geol. Soc. Am., Bull., vol. vi, p. 4.

Describes the character of a basic rock derived from granite in Jefferson County, N. Y. Gives the chemical analysis of a specimen of the altered material, and discusses the evidences as to the causes which have produced the alteration.

444 —— Crystalline limestones and associated rocks of the northwestern Adirondack region [New York].

Geol. Soc. Am., Bull., vol. vi, pp. 263–284.

Describes the extent and character of the limestones, and the areas of gneiss, igneous rocks, granite, and diorites. Gives a more detailed statement of the occurrence, character, and relations of the three varieties of gabbro associated with the limestone.

445 **Smyth** (Henry Lloyd). The Republic trough [Michigan].

U. S. Geol. Surv., 15th Ann. Rept., pp. 608–630, pls. xxv–xxvi.

Describes the distribution and character of the Archean and the Lower and Upper Marquette series and their contacts. Discusses the position, relations, and origin of the ore deposits.

446 **Snow** (E. P.). The Fourmile placer fields of Colorado and Wyoming.

Eng. and Mg. Jour., vol. lx, pp. 102–104.

Describes the occurrence of gold placers in Routt County, Colo., and Carbon County, Wyo.

447 —— The Hartville iron-ore deposits in Wyoming.

Eng. and Mg. Jour., vol. lx, pp. 320–321.

Describes the character and geologic relations of the ore body.

448 —— The Douglas Creek placers, Albany County, Wyoming.

Eng. and Mg. Jour., vol. lx, pp. 539–541, with map.

Describes the occurrence of this placer in the Medicine Bow range.

449 **Spencer** (Arthur C.). Certain minerals of Webster County, Iowa.

Iowa Acad. Sci., Proc., vol. ii, pp. 143–145.

Describes the character and occurrence of quartz, pyrite, celestite, and gypsum.

450 **Spencer** (J. W.). Reconstruction of the Antillean continent.

Geol. Soc. Am., Bull., vol. vi, pp. 103–140, pl. 1.

Describes the characteristics of old valleys and the deformation of land surfaces. Describes the submarine valley and fjords of the continental and antillean regions, and discusses the evidences of elevation and subsidence in Pliocene and Pleistocene time. Discusses the evidence of the separation of the Antillean basins from the Pacific and their connection with the Atlantic, and the biologic bearing of the physical changes of level.

451 —— [On the formation of glacial terrace plains.]

Geol. Soc. Am., Bull., vol. vi, pp. 460–461 (⅔ p.).

In discussion of paper by C. H. Hitchcock on "High level gravels in New England."

452 —— [Lake Newberry as the probable successor of Lake Warren.]

Geol. Soc. Am., Bull., vol. vi, p. 466 (⅓ p.).

In discussion of paper by H. L. Fairchild on the same subject.

453 **Spencer** (J. W.). The geological survey of the Great Lakes.

Am. Assoc. Adv. Sci., Proc., vol. xliii, pp. 237-243.

Describes the former continental elevation, the character of the lake basins, and the buried drainage systems.

Describes the deformation of the deserted beaches, the origin of the glacial lakes, and changes of their outlets.

454 —— Duration of Niagara Falls.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xliii, pp, 244-246.

455 —— Note on Mr. Kümmel's review of the "Reconstruction of the Antillean continent."

Jour. of Geol., vol. iii, pp. 497-498.

Discusses some of the evidences of recent changes in continental elevations.

456 —— Preliminary notes on the late connection and separation of the Pacific Ocean and Gulf of Mexico.

Geol. Mag., dec. iv, vol. ii, pp. 306-308.

Describes the author's recent observations in this region.

457 **Spurr** (J. Edward). Economic geology of the Mercur mining district, Utah. With introduction by S. F. Emmons.

U. S. Geol. Surv., 16th Ann. Rept., part ii, pp. 343-455, pls. xxv-xxxiv, figs. 42-47.

Introduction.—The Oquirrh Mountains, by S. F. Emmons. Chapter i is a description of the general geology of the mining district. Chapter ii describes the geology of the Silver Ledge and the nature of the silver ores and discusses their origin. Chapter iii describes the occurrence and character of the gold ores and discusses their origin.

458 **Stanton** (T. W.). Review of "Boletin de la comision geologica de Mexico, No. 1; Fauna fosil de la Sierra de Catorce, San Luis Potosi," by Antonio del Castillo and José G. Aguilera.

Jour. of Geol., vol. iii, pp. 858-861.

Discusses the relation of the Catorce beds to the Lower Cretaceous beds of the Pacific Coast and the Texas region.

459 —— [Report on the invertebrate fossils from Black Hills, near Belvidere, Kans., collected by R. T. Hill.]

Am. Jour. Sci., 3d ser., vol. l, pp. 215-218.

Gives brief notes on the species collected.

460 **Stevenson** (John J.). On the New England coal fields of the United States.

Manchester Geol. Soc., Trans., vol. xxiii, pp. 127-121.

Gives a historical sketch of coal mining in New England, a brief description of the strata containing coal beds, and a list of plant remains collected from them.

461 **Storms** (W. H.). The wall rocks of California gold mines.

Eng. and Mg. Jour., vol. lix, pp. 172-173.

Describes the occurrence of gold and the associated rocks in various parts of California.

T.

462 **Taylor** (Frank B.). Changes of level in the region of the Great Lakes in recent geological time. [Letter to J. D. Dana.]

Am. Jour. Sci., 3d ser., vol. xlix, pp. 69–71.

Reviews the evidences of the height reached by the highest old shore line of Lake Superior, the extent of glacial time as shown by the Niagara cataract, and the nature of the changes that have been produced by alternations in the altitude of the region.

463 —— Niagara and the Great Lakes.

Am. Jour. Sci., 3d ser., vol. xlix, pp. 249–270.

Describes the extent of the Chippewa beach in the Lake Superior and Michigan-Huron basin, the beaches of the Gulf of Winnipeg, the extent of the Hudson-Champlain strait, and the extent of the first Lake Algonquin. Reviews descriptions of the Niagara gorge, describes the succession of the lake stages, and gives a chronologic conspectus of the post-Glacial history of the Great Lakes.

464 —— The Munuscong Islands [Michigan].

Am. Geol., vol. xv, pp. 24–33.

Presents a map showing the location of the ancient Munuscong Islands to the north of Mackinac Strait. Describes the character of the surface formations and beaches, and in a table compares the heights of the principal shore lines within the area of the map.

465 —— The second Lake Algonquin.

Am. Geol., vol. xv, pp. 100–120 and 162–179.

Describes the southern extension of the Nipissing beach along the Michigan and Huron shores and discusses the causes of the change of outlet and the deformation of the Nipissing plane. Presents a map showing the extent of Lake Algonquin and the subsequent deformation of the Nipissing plane. Describes the order of the changes and reviews Dr. Spencer's paper on the duration of Niagara gorge. Discusses the evidences of recent elevation and tilting in contiguous regions.

466 —— The Nipissing beach on the north Superior shore.

Am. Geol., vol. xv, pp. 304–314.

Describes the general character of the Nipissing beach and its form and extent at certain localities on the north shore of Lake Superior. This paper is based on observations published by A. C. Lawson in a paper entitled "Sketch of the coastal topography of the north side of Lake Superior with special reference to the abandoned strands of Lake Warren." Gives the author's summary and conclusions.

467 —— [On the use of the term "Erigan".]

Am. Geol., vol. xv, pp. 394–395 (correspondence).

Refers to the author's use of the term "Erigan" to denote a section of the Niagara gorge and proposes to substitute the name "Little Niagara" throughout for "Erigan."

468 **Thomas** (Benjamin W.), **Woodward** (Anthony) and. The microscopical fauna of the Cretaceous in Minnesota, with additions from Nebraska and Illinois. (Foraminifera, Radiolaria, Coccoliths, Rhabdoliths.)

Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. iii, pt. i, pp. 23–54, pls. C, D, and E.

See Woodward (A.) and Thomas (B. W.), No. 567.

469 **Tilton** (J. L.). On the southwestern part of the Boston Basin [Massachusetts].

Boston Soc. Nat. Hist., Proc., vol. xxvi, pp. 500–505, with map.

Describes the general character of the rocks, with a discussion of special parts of the boundary between the granite and basin rocks.

470 —— Geological section along Middle River, in central Iowa.

Iowa Geol. Surv., vol. iii, 2d Ann. Rept., pp. 137–146.

Gives a cross section of the region and the vertical section of the Carboniferous rocks at various localities. Discusses the subdivision of the Iowa Coal Measures into upper and lower divisions.

471 **Todd** (J. E.). Inequalities in the old Paleozoic sea bottom.

Am. Geol., vol. xv, p. 64 (½ p.) (correspondence).

Gives the depths at which crystalline rocks were struck in well borings at various localities in Iowa and Nebraska.

472 —— Volcanic ash bed near Omaha [Nebr.].

Am. Geol., vol. xv, p. 130 (½ p.) (correspondence).

Describes briefly an occurrence of a volcanic ash bed in the bluffs of the Missouri River near Omaha, Nebr.

473 —— Recent geological work in South Dakota.

Am. Geol., vol. xvi, p. 202 (correspondence).

Gives a brief statement of some of the recent results obtained by two parties sent into the field by the School of Mines of South Dakota.

474 —— and **Bain** (H. Foster). Interloessial till near Sioux City, Iowa.

Iowa Acad. Sci., Proc., vol. ii, pp. 20–23, pl. 1.

Describes the outcrop of the till in the banks of the Big Sioux River. Discusses its origin.

475 **Turner** (Henry W.). The age and succession of the igneous rocks of the Sierra Nevada.

Jour. of Geol., vol. iii, pp. 385–414, with map.

Describes the topographic and general geologic features of the Sierra Nevada range and the character, age, and succession of the igneous rocks. Includes chemical analyses of some of the pre-Tertiary and Tertiary igneous rocks and a geologic map of the region.

476 —— Auriferous gravels of the Sierra Nevada.

Am. Geol., vol. xv, pp. 371–379.

Reviews the paleontologic evidence as to the age of the two groups into which the auriferous gravels are divided. Presents a report by F. H. Knowlton on the fossil plants collected at certain localities in California.

477 —— Further notes on the gold ores of California.

Am. Jour. Sci., 3d ser., vol. xlix, pp. 374–380.

Describes the occurrence of gold in barite, gold associated with talc-schists, and the occurrence of gold-quartz veins in Tertiary rocks in California.

Describes the occurrence and chemical composition of mariposite and the occurrence of tetrahedrite in quartz veins.

478 **Turner** (Henry W.). Gold in serpentine.

Am. Jour. Sci., 3d ser., vol. xlix, p. 478 (½ p.) (communicated).

Refers to a previous article in which the occurrence of serpentine in gold-quartz veins is described.

479 —— Volcanic dust in Texas.

Science, new ser., vol. i, pp. 453–455.

Gives a description by R. T. Hill of the locality where the material was found, and refers to similar volcanic material from Nebraska, Montana, Idaho, and California.

480 —— The gold belt of California.

Abstract: Sci. Am. Suppl., vol. xxxix, pp. 16197–16198.

481 —— Lindgren (W.) and. Marysville folio, California.

U. S. Geol. Surv., Geol. Atlas of the U. S., folio 17.

See Lindgren (W.) and Turner (H. W.), No. 297.

482 —— Smartsville folio, California.

U. S. Geol. Surv., Geol. Atlas of the U. S., folio 18.

See Lindgren (W.) and Turner (H. W.), No. 298.

U.

483 **Udden** (J. A.). Fossil frost cracks.

Sci. Am., vol. lxxii, p. 102.

Describes the occurrence of certain phenomena, considered to be frost cracks, in Cretaceous sandstone of the Black Hills, South Dakota.

484 **Ulrich** (E. O.). On the structure and systematic position of "Anomaloides," and a proposal to change the name to Anomalospongia.

Minn. Geol. and Nat. Hist. Surv. Final Rept., vol. iii, part i, pp. 68–74.

Remarks on the previous description of Anomoloides reticulatus, and describes the characters of the new genus and species, Anomalospongia reticulatus.

485 —— On Lower Silurian Bryozoa of Minnesota.

Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. iii, part i, pp. 96–332, pls. 1–28, figs. 8–20.

Gives the terminology of Bryozoa, and remarks on the preservation, methods of study, classification, and geologic distribution of Paleozoic Bryozoa. Describes genera and species occurring in the Lower Silurian of Minnesota.

486 **Ulrich** (E. O.), **Winchell** (N. H.) and. Historical sketch of investigation of Lower Silurian in the Upper Mississippi Valley.

Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. iii, part i, pp. ix–liv.

See Winchell (N. H.) and Ulrich (E. O.), No. 563.

487 **Upham** (Warren). Late Glacial or Champlain subsidence and reelevation of the St. Lawrence river basin.

Am. Jour. Sci., 3d ser., vol. xlix, pp. 1–18, with map.

Discusses the evidences of the epeirogenic movements that began and ended the Champlain epoch. Describes the character and distribution of the beaches of the Glacial lakes that occupied the St. Lawrence basin.

488 **Upham** (Warren). Epochs and stages of the Glacial period.

Am. Jour. Sci., 3d ser., vol. xlix, pp. 305–306.

States briefly the reasons for considering that Pleistocene glaciation was continuous, with fluctuations of the ice margin much greater in the interior than eastward. Presents a table showing the minor time subdivisions of the Glacial and Champlain epochs.

489 —— Drumlin accumulation.

Am. Geol., vol. xv, pp. 194–195 (correspondence).

Describes the general features of drumlins as shown by recent descriptions of the glacial phenomena of Greenland.

490 —— Climatic conditions shown by North American inter-Glacial deposits.

Am. Geol., vol. xv, pp. 273–295.

Describes the fluctuations of the borders of the ice sheet, and the character of the inter-Glacial deposits in Minnesota, Iowa, Illinois, Indiana, Ohio, New England, and portions of Canada. Mentions many of the fossils found in these inter-Glacial beds. Presents a map showing the maximum area of the ice sheet and the stages of its recession, and a table showing the epochs and stages of the Glacial period.

491 —— Stages of recession of the North American ice sheet, shown by glacial lakes.

Am. Geol., vol. xv, pp. 396–399 (correspondence).

Gives the sequence of events of the recession of the ice sheet represented by seven stages of waning glaciation, and discusses the evidence attributing the Pleistocene shore lines to lakes dammed on the north by the receding ice sheet.

492 —— Correlations of stages of the Ice age in North America and Europe.

Am. Geol., vol. xvi, pp. 100–113, pls. v–vi.

Presents a map of the glaciated region of North America and one of the glaciated area of Europe. Describes the different stages into which the author divides the Glacial and Champlain epochs. Discusses the evidences of the character, formation, and accumulation of marginal moraines, and compares the Alaskan ice sheet with that of Greenland.

493 —— Warm, temperate vegetation near glaciers.

Am. Geol., vol. xvi, pp. 326–327 (correspondence).

States the author's opinions as to the existence of a warm, temperate vegetation near the glacial ice sheet.

494 —— View of the Ice age as two epochs, the Glacial and Champlain.

Science, new ser., vol. ii, pp. 529–533.

Discusses the nomenclature of the epochs and stages of the Glacial epoch, and describes their character and extent in North America.

495 —— Tertiary and early Quaternary baseleveling in Minnesota, Manitoba, and northwestward.

Abstract: Geol. Soc. Am., Bull., vol. vi, pp. 17–20.

See Bibliography and Index for 1894, No. 578.

496 **Upham** (Warren). Departure of the ice sheet from the Laurentian lakes.

Abstract: Geol. Soc. Am., Bull., vol. vi, pp. 21-27.

Describes the phenomena attending the retreat of the ice sheet, the character of the shore lines, the height of the beaches of the western Superior glacial lake and of lakes Warren and Algonquin, and the formation of these glacial lakes. Discusses the character and progress of the uplift following the recession of the ice sheet.

497 —— Discrimination of glacial accumulation and invasion.

Geol. Soc. Am., Bull., vol. vi, pp. 343-352.

Discusses the mode of formation of ice sheets, the character of the drift and morainal phenomena, and the causes of ice accumulation and departure. Describes the phenomena attending an invasion by the advancing border of an ice sheet, and discusses the meteorologic explanation of the irregularity of glacial invasion and the criteria of ice accumulation and invasion.

498 —— Quaternary time divisible into three periods—the Lafayette, Glacial, and Recent.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xliii, pp. 219-223.

Describes the character of the Glacial and post-Glacial phenomena, and gives an estimate of the duration of Quaternary time.

499 —— Minor time divisions of the Ice age.

Am. Nat., vol. xxix, pp. 235-241.

Discusses the evidences of fluctuations of the ice sheet and gives the author's classification.

500 —— Late Glacial or Champlain subsidence and reelevation of the St. Lawrence River Basin.

Minn. Geol. and Nat. Hist. Surv., 23d Ann. Rept., pp. 156-193.

Discusses the evidences of uplift and subsidence prior to and during the Glacial period as shown by beaches of the glacial lakes of the St. Lawrence Basin.

V.

501 **Van Hise** (Charles R.). The origin of the dells of the Wisconsin.

Wis. Acad. Sci. Arts, Letters, Trans., vol. x, pp. 556-560.

Discusses the evidence of the position of the dells of the Wisconsin River and tributaries as being controlled by a rectangular system of joints in the strata.

502 —— Summary of current pre-Cambrian North American literature.

Jour. of Geol., vol. iii, pp. 227-236 and 709-721.

Reviews a number of recent papers describing pre-Cambrian rocks of North America.

503 —— and **Bayley** (William Shirley). Preliminary report on the Marquette iron-bearing district of Michigan.

U. S. Geol. Surv., 15th Ann. Rept., pp. 477-650, pls. xiii-xxvi.

Describes the distribution, geologic relations, and lithologic characters of the rocks forming the Basement Complex, Lower Marquette series, and the Upper Marquette series, and discusses the dynamic movements which have affected these formations and their correlation with other formations. Includes a chapter on the Republic Trough, by H. L. Smyth.

504 **Vaughan** (T. Wayland). The stratigraphy of northwestern Louisiana.

Am. Geol., vol. xv, pp. 205–229.

Reviews the literature of the Cretaceous and Tertiary strata of the region and describes the lithologic and faunal characters of the Eocene deposits. Gives lists of fossils collected at various localities. Discusses the relations of the Eocene and Miocene formations and the distribution of the Sparta sands of undetermined age, and the character of the Pleistocene and Recent deposits.

505 —— Section of the Eocene at Old Point Caddo Landing, Harrison County, Texas, with notes upon a collection of plants from that locality, by F. H. Knowlton.

Am. Geol., vol. xvi, pp. 304–309.

Describes the section at this locality and gives a list of fossils collected, and also fossils collected at Cross Lake and Mansfield, La.

506 **Vogdes** (A. W.). Notes on Paleozoic Crustacea No. 4. On a new trilobite from Arkansas Lower Coal Measures.

Cal. Acad. Sci., Proc., vol. iv, pp. 589–591.

Describes the characters of Griffithides ornata n. sp., from the Coal Measures of Arkansas and discusses its affinities.

507 —— A supplement to the bibliography of the Paleozoic Crustacea.

Cal. Acad. Sci., Proc., vol. v, pp. 53–76.

This paper is a continuation of the Bibliography of Paleozoic Crustacea published in Occasional Papers of the California Academy of Sciences, No. iv, 1893, bringing it up to date (1896) and correcting some errors and omissions of the first edition.

508 **Volckening** (G. J.) and **Luquer** (L. McI.). On three new analyses of sodalite from three new localities.

Am. Jour. Sci., 3d ser., vol. xlix, pp. 465–466.

See Luquer (L. McI.) and Volckening (G. J.), No. 302.

W.

509 **Walcott** (Charles Doolittle). Lower Cambrian rocks in eastern California.

Am. Jour. Sci., 3d ser., vol. xlix, pp. 141–144.

Mentions the previous descriptions of the White Mountain region. Gives a section of the rocks of Black Canyon and a summary of the entire section—4,900 feet of quartzites, limestones, and shales. Describes the character of the fauna and considers that it represents the oldest of the Cambrian faunas of western United States.

510 —— The Appalachian type of folding in the White Mountain range of Inyo County, California.

Am. Jour. Sci., 3d ser., vol. xlix, pp. 169–174.

Gives a general section of the rocks of this range and describes the geologic structure as exhibited in Silver and Black canyons. Illustrates the structure by several figures.

511 **Walcott** (Charles Doolittle). Algonkian rocks of the Grand Canyon of the Colorado.

Jour. of Geol., vol. iii, pp. 312–330, with geologic map.

Refers to the existing literature on these rocks, describes their geographic position and distribution, and discusses the nomenclature adopted. Describes their stratigraphic relations and gives a vertical section of the Grand Canyon series. Includes a discussion of the conditions of their sedimentation, geologic age, and the possibility of correlating this series with others of similar lithologic character.

512 —— Discovery of the genus Oldhamia in America.

U. S. Nat. Mus., Proc., vol. xvii, pp. 313–315.

Reviews previous descriptions of this genus and describes Oldhamia (Murchisonites) occidens n. sp., from the shales and slates of eastern New York, which are considered to belong either to the Upper Cambrian or Lower Ordovician.

513 —— Note on some appendages of the trilobite.

Wash. Biol. Soc., Proc., vol. ix, pp. 89–97, pl. 1.

Describes the characteristics of antennæ found at Rome, N. Y.

514 **Walker** (A. E.). Hamilton sponges [Ontario].

Hamilton Assoc., Jour. and Proc., No. xi, pp. 85–87.

Gives notes and figures of sponges from Niagara rocks near Hamilton, Ontario.

515 **Walter** (Emma). Does the Delaware water gap consist of two river gorges?

Phila. Acad. Nat. Sci., Proc. 1895, pp. 198–205.

Discusses the evidences which indicate that the Delaware River flowed in an opposite direction in pre-Glacial times and quotes from other descriptions of similar phenomena.

516 **Ward** (Henry A.). Preliminary notice of the Plymouth meteorite [Indiana].

Am. Jour. Sci., 3d ser., vol. xlix, pp. 53–55, two figures.

Describes the finding of a meteorite at Plymouth, Ind., and gives a chemical analysis.

517 **Ward** (Lester Frank). The Potomac formation.

U. S. Geol. Surv., 15th Ann. Rept., pp. 307–397, pls. ii–iv.

Describes the stratigraphic and paleontologic relations of the several members of the Potomac formation in the Atlantic Coastal Plain and includes a general description of the fossil floras of these beds and tables showing the geographic range of American and foreign species.

518 —— Fossil cycadean trunks of North America, with a revision of the genus Cycadeoidea Buckland.

Wash. Biol. Soc., Proc., vol. ix, pp. 75–88.

Describes specimens recently found in the Black Hills and gives a list of papers on the several species of the genus Cycadeoidea Buckland. Describes C. jennyana n. sp.

519 **Watts** (O. P.). The cause of the movement of glaciers.

Sci. Am. Suppl., vol. xxxix, p. 16157.

520 **Watts** (W. L.). The gas and petroleum yielding formations of the Central Valley of California.

Cal. State Mg. Bureau, Bull. No. 3, 100 pp.

Describes the occurrence of natural gas, petroleum, and asphaltum in this region and gives the sections of several wells and lists of the fossils collected in Cretaceous and Tertiary strata.

521 **Weed** (Walter Harvey). Montana coal fields.

U. S. Geol. Surv., 16th Ann. Rept., part iv, pp, 144–146.

Notes on the occurrence of coal in the Cretaceous rocks of Montana in a paper by E. W. Parker on the production of coal in 1894.

522 —— and **Pirsson** (Louis V.). Highwood Mountains of Montana.

Geol. Soc. Am., Bull., vol. vi, pp. 389–422, pls. 24–26.

Describes the topographic features, geologic structure, and the characteristics of each eruptive center of the Highwood Mountains. Describes the remarkable differentiation zone of Square Butte, and the characters and minerals of the dark rock, for which the name "shonkinite" is proposed.

523 —— On the igneous rocks of the Sweet Grass Hills, Montana.

Am. Jour. Sci., 3d ser., vol. l, pp. 309–313.

Describes the topographic character and geologic structure of the Three Buttes, known as the Sweet Grass Hills. Describes the petrographic characters of the igneous rocks, quartz-diorite porphyrite, quartz-syenite porphyry, and minette occurring in this region.

524 —— Igneous rocks of Yogo Peak, Montana.

Am. Jour. Sci., 3d ser., vol. l, pp. 467–479.

Describes the topographic character and geologic structure of the Little and Big Belt mountains, Yogo Peak forming a conspicuous summit of the Little Belt range. Describes the petrographic character of the syenite, yogoite, and shonkinite, illustrating the variation and gradation in the chemical and mineralogic composition of the Yogo rocks. Discusses the differentiation at Yogo Peak and the classification adopted.

525 **Weeks** (Joseph D.). Manganese.

U. S. Geol. Surv., 16th Ann. Rept., part iii, pp. 389–457.

Includes a brief discussion of the origin and occurrence of manganese and notes on its occurrence in Alabama, Arkansas, California, Colorado, Georgia, Indian Territory, New Jersey, Pennsylvania, Tennessee, Vermont, Virginia, New Brunswick, Nova Scotia, and Cuba.

526 —— Natural gas in 1894.

U. S. Geol. Surv., 16th Ann. Rept., part iv, pp. 405–429.

Includes notes on the occurrence of natural gas in Ohio, Indiana, and California.

527 —— The Elk Garden and Upper Potomac coal fields of West Virginia.

Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 351–364, figs. 1–2.

Gives a general description of the region and tables of chemical analyses of the coal and of coal production.

528 **Weidman** (Samuel). On the quartz keratophyre and associated rocks of the north range of the Baraboo Bluffs [Wisconsin].

Univ. of Wis., Science ser., vol. i, pp. 35–56, pls. 1–3.

Gives a geologic map of the region and describes the areal geology and the occurrence and microscopic characters of the quartz keratophyre.

529 **Weller** (Stuart). The succession of fossil faunas at Springfield, Missouri.

Am. Jour. Sci., 3d ser., vol. xlix, pp. 185–199.

The strata from which the fossils were obtained belong to the Burlington and Keokuk groups of the Mississippian series. The rocks are divided into twelve zones, and a brief description of the lithologic character and a list of the fossils collected from each zone is given. Presents a table showing the range of the species in the different zones and groups. Considers that the faunas represent the Burlington and Keokuk and that they are continuous, and should be designated by a single name. (Osage group is said to be the name first suggested.)

530 —— A circum-insular Paleozoic fauna.

Jour. of Geol., vol. iii, pp. 903–917.

Discusses and illustrates by two maps the distribution of land and water during early Devonian time and at the close of Devonian time. Discusses the evidence of a union of eastern and western Devonian provinces and the generic and specific evidences of the origin of the littoral fauna of the Ozark Island. Presents a table showing the geologic and geographic range of the genera of the Chouteau group.

531 **Wheeler** (H. A.). Note on the glacial drift in St. Louis [Mo.].

St. Louis Acad. Sci., Trans., vol. vii, pp. 121–122.

Gives a brief description of an occurrence of glacial clay and gravel in the city of St. Louis.

532 —— Note on the occurrence of blende in lignite.

St. Louis Acad. Sci., Trans., vol. vii, pp. 123–125.

Abstract: Eng. and Mg. Jour., vol. lix, p. 248.

Describes an occurrence of blende-bearing lignite in a ferruginous sandstone and discusses its bearing on the origin of the Missouri zinc deposits.

533 —— Recent additions to the mineralogy of Missouri.

St. Louis Acad. Sci., Trans., vol. vii, pp. 126–131.

Gives a list of minerals found in Missouri since the publication, in 1884, of a paper by A. V. Leonhard, "Notes on the mineralogy of Missouri," in the Transactions of the St. Louis Academy of Sciences, vol. iv, p. 440.

534 **White** (Charles A.). Notes on the invertebrate fauna of the Dakota formation, with descriptions of new molluscan forms.

U. S. Nat. Mus., Proc., vol. xvii, pp. 131–138, pl. viii.

Reviews the previous descriptions of marine fauna of the Dakota, describes five new species from this formation in Nebraska, and discusses the evidence of the nonmarine character of the Dakota beds.

535 —— The Bear River formation and its characteristic fauna.

U. S. Geol. Surv., Bull., No. 128, 86 pp., pls. xi.

Reviews the history of the Bear River formation, discusses its taxonomic position, and describes its geographic distribution and the characteristics of its fossils. Includes a biologic discussion and a comparison of Bear River fauna with other American fossil faunas. Discusses the geographic and time range of Pyrgulifera.

536 **White** (Charles Henry). An examination into the nature of Palæotrochis.

Elisha Mitchell Sci. Soc., Jour. 1894, part ii, pp. 50–66, with plate.

Reviews Emmons's description of Palæotrochis and of the strata in which it occurs in North Carolina. Discusses the evidences of its concretionary and of its organic origin.

537 **White** (David). The Pottsville series along New River, West Virginia.

Geol. Soc. Am., Bull., vol. vi, pp. 305–320.

Discusses the use of the term Pottsville. Describes the differentiation of floras in Pottsville time and the stratigraphic relations of the series, giving vertical sections of the Piney Creek and Nuttall and Hawks Nest sections. Discusses the paleontologic relations of the beds and gives lists of fossils from various horizons.

538 **Whiteaves** (J. F.). Revision of the fauna of the Guelph formation of Ontario, with descriptions of a few new species.

Geol. Surv. of Can., Paleozoic Fossils, vol. iii, part ii, pp. 45–109, pls. ix–xv.

Mentions the species found in this formation in Ontario, with notes on their occurrence in other formations. Describes several new species.

539 —— Systematic list, with references, of the fossils of the Hudson River or Cincinnati formation at Stony Mountain, Manitoba.

Canada Geol. Surv., Paleozoic Fossils, vol. iii, part ii, pp. 111–128.

Gives a brief sketch of the discovery of Hudson River strata at this locality and a list of fossils that have been collected.

540 **Williams** (Edward H.). Notes on the southern ice limit in eastern Pennsylvania.

Am. Jour. Sci., 3d ser., vol. xlix, pp. 174–185.

Presents a map showing the boundaries recognized during the previous year. Discusses the evidences of the character of the deposits made during the advance and retreat of the ice sheet. Describes the distribution and character of the glacial deposits of the region, the influence of the ridges on the ice advance, and the glacial gravels of the Juniata Valley.

541 **Williams** (George Huntington). General relations of the granitic rocks in the middle Atlantic Piedmont plateau.

U. S. Geol. Surv., 15th Ann. Rept., pp. 657–684, pls. xxvii–xxxv.

Discusses the criteria for the recognition of ancient plutonic rocks in highly metamorphosed terranes, the distribution and age of the Appalachian igneous granites, and the gradations of Maryland granites. Discusses the origin of Maryland pegmatites.

542 **Williams** (Henry Shaler). On the recurrence of Devonian fossils in strata of Carboniferous age.

Am. Jour. Sci., 3d ser., vol. xlix, pp. 94–101.

Describes the geologic relations and age of the strata near Batesville, Ark., and remarks on the occurrence of Devonian fossils in rocks that belong to the Carboniferous. Compares the Batesville fauna with the Devonian faunas of Eureka, Nev., Shasta County, Cal., and of the Mississippi Valley. Describes the differences in the succession of the Devonian faunas of the West and of the Appalachian province.

543 **Williston** (S. W.). New or little known extinct vertebrates.
Kans. Univ. Quart., vol. iii, pp. 165–176, pls. xiv–xix.
Describes vertebrate remains contained in the museum of the University of Kansas.

544 —— Semi-arid Kansas.
Kans. Univ. Quart., vol. iii, pp. 209–216, with map
Gives a general description of the geology of Kansas and a geologic sketch map of the State.

545 —— Note on the mandible of Ornithostoma.
Kans. Univ. Quart., vol. iv, p. 61, pl. D.
Remarks on the character of the skulls of Ornithostoma from the Kansas Cretaceous.

546 **Wilson** (A. G.). The Upper Silurian in northeastern Iowa.
Am. Geol., vol. xvi, pp. 275–281.
Reviews the descriptions of Owen, Hall, and Keyes of the Silurian rocks of this region, and gives the results of the author's study of these rocks in Delaware, Jones, Dubuque, and Clayton counties, Iowa. Mentions fossils collected at various localities.

547 **Winchell** (H. V.). [The genesis of ore deposits.]
Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 957–962.
In discussion of paper by F. Posepny on the same subject.

548 —— and **Grant** (U. S.). Preliminary report on the Rainy Lake gold region [Minnesota].
Minn. Geol. and Nat. Hist. Surv., 23d Ann. Rept., pp. 36–105.
Describes the occurrence of gold and the character and relations of the Laurentian, Coutchiching, and Keewatin rocks of the Rainy Lake region. Describes the occurrence of the gold veins.

549 **Winchell** (N. H.). The age of the Galena limestone.
Am. Geol., vol. xv, pp. 33–39.
Reviews the paleontologic data regarding the age of the Galena limestone, presented by C. D. Walcott in a paper entitled "The Utica slate and related formations." Gives a brief statement of recent work of the Minnesota Geological Survey on the Lower Silurian rocks, and mentions the fossil characteristics of certain horizons.

550 —— The stratigraphic base of the Taconic or Lower Cambrian.
Am. Geol., vol. xv, pp. 153–162.
Gives a historical sketch of the work on the Cambrian rocks of England, discusses the character of the pre-Cambrian rocks in general, and refers to the opinions of various writers on the Cambrian strata of Canada, New England, New York, and Pennsylvania.

551 —— The paleontologic base of the Taconic or Lower Cambrian.
Am. Geol., vol. xv, pp. 229–234.
Describes the succession of Cambrian strata in Wales and the occurrence of volcanic outbreaks during its deposition. Refers to the determination of the succession of the Paradoxides and Olenellus faunas and the evidence of the nonconformity between the crystalline Archean rocks and the overlying sedimentaries.

552 **Winchell** (N. H.). The eruptive epochs of the Taconic or Lower Cambrian.

Am. Geol., vol. xv, pp. 295–304.

Describes the differences between the Archean complex and the eruptive rocks associated with the Cambrian in North America. Discusses the relations and succession of the Cambrian rocks of western New England, eastern New York, and the evidences as to the age of the Adirondack gabbros. Reviews the recent opinions as to the succession of the Adirondack rocks.

553 —— Canadian localities of the Taconic eruptives.

Am. Geol., vol. xv, pp. 356–363.

Reviews the descriptions and classifications of the Huronian and Quebec groups in Canada by Logan, Selwyn, Ells, and Dawson, and discusses the relations of these sedimentary and igneous rocks.

554 —— Steps of progressive research in the geology the Lake Superior region prior to the late Wisconsin survey.

Am. Geol., vol. xvi, pp. 12–20.

Reviews the descriptions of the Huronian rocks of Lake Superior by Canadian geologists, a report by Foster and Whitney on the geology of the Lake Superior district, and reports by Brooks, Pumpelly, and Rominger on the copper-bearing rocks. Gives a summary of the author's views regarding the state of opinion on the geological questions under consideration up to the time of the Wisconsin survey.

555 —— The Keweenawan according to the Wisconsin geologists.

Am. Geol., vol. xvi, pp. 75–86.

Discusses the conclusions of the geologists of the Wisconsin survey from 1873 to 1879 concerning the Laurentian, Huronian, and Keweenawan rocks of the Lake Superior region, and also the published opinions of Irving and Van Hise.

556 —— A rational view of the Keweenawan.

Am. Geol., vol. xvi, pp. 150–162.

States several objections to separating the horizontal Lake Superior sandstones from the tilted sandstones, and discusses the evidences in support of the several statements. Discusses the evidence as to the age of the eruptive rocks which have been included in the Keweenawan series.

557 —— The synchronism of the Lake Superior region with other portions of the North American continent.

Am. Geol., vol. xvi, pp. 205–213.

Compares the succession of geologic events in the Lake Superior region with that in eastern New York, and explains the accompanying map of the Lake Superior region.

558 —— The latest eruptives of the Lake Superior region.

Am. Geol., vol. xvi, pp. 269–274.

Describes the synclinorium of the Lake Superior region, and discusses the relations of certain eruptives and the evidences indicating that the Black Bay sandstones are a part of the Keweenawan.

559 **Winchell** (N. H.). Comparative taxonomy of the rocks of the Lake Superior region.

Am. Geol., vol. xvi, pp. 331–337.

Presents a table showing the classification of the Lake Superior formations, and compares it with the classification adopted by other writers.

560 —— The origin of the Archean greenstones.

Minn. Geol. and Nat. Hist. Surv., 23d Ann. Rept., pp. 4–35.

Describes the megascopic and microscopic characters of greenstones, and discusses the theory of dynamic metamorphism and the greenstones as a geologic terrane. This paper is mainly a critical review of a paper by Prof. G. H. Williams on "The greenstone schist areas of the Menominee and Marquette regions of Michigan; a contribution to the subject of dynamic metamorphism in eruptive rocks."

561 —— and **Schuchert** (Charles). Sponges, graptolites, and corals from the Lower Silurian of Minnesota.

Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. iii, part i, pp. 55–95, pls. F and G.

Describes species of sponges, graptolites, and corals occurring in Lower Silurian rocks of Minnesota, including several new species.

562 —— The Lower Silurian Brachiopoda of Minnesota.

Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. iii, part i, pp. 333–474, pls. xxix–xxxiv.

Gives a brief sketch of the occurrence of brachiopods in the Lower Silurian rocks of Minnesota and description of genera and species.

563 —— and **Ulrich** (E. O.). Historical sketch of investigation of Lower Silurian in the Upper Mississippi Valley.

Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. iii, part i, pp. ix–liv.

Gives a bibliography of Lower Silurian literature of the Mississippi Valley.

564 **Winslow** (Arthur). Lead and zinc deposits [Missouri].

Mo. Geol. Surv., vols. vi and vii, 1894.

Abstract: Am. Inst. Mg. Engrs., Trans., vol. xxiv, pp. 634–689 and 932–933, pls. i–iii, figs. 1–17.

Gives a historical sketch of lead and zinc, a description of their compounds, and their distribution and conditions of occurrence. Describes the occurrence of lead and zinc in foreign countries and in the various States of the United States. Describes the physiography and geology of the mining regions of Missouri, and includes an account of the development and occurrences of lead and zinc ores in this State. Discusses the nomenclature of the formations and describes their distribution and structure. Gives lists of fossils collected from the Silurian rocks. Includes a discussion of the origin of lead and zinc ores and tables of production.

565 —— The geologic history of Missouri.

Am. Geol., vol. xv, pp. 81–89.

Presents a table showing the classification of the Missouri rocks. Describes the geologic changes which occurred in Algonkian, Cambrian, Silurian, Devonian, and Carboniferous times and the erosion during the Mesozoic and Tertiary eras.

566 **Winslow** (Arthur). A Paleozoic eruptive in Missouri.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xliii, pp. 227–229.

Describes the occurrence of pegmatite in Lower Silurian rocks of Missouri and its petrographic characters.

567 **Woodward** (Anthony) and **Thomas** (Benjamin W.). The microscopical fauna of the Cretaceous in Minnesota, with additions from Nebraska and Illinois (Foraminifera, Radiolaria, Coccoliths, Rhabdoliths).

Minn. Geol. and Nat. Hist. Surv., Final Rept., vol. iii, part i, pp. 23–54, pls. C, D, and E.

Describes the methods of microscopic preparation of the material and the foraminiferal and radiolarian remains found in the Cretaceous of Minnesota. Gives a brief sketch of the discovery of other fossils in the Cretaceous of this State.

568 **Woodward** (Henry). On some decapod Crustacea from the Cretaceous formation of Vancouvers Island, etc.

Brit. Assoc. Adv. Sci., Rept. for 1895, pp. 696–697.

Brief notes on specimens of fossil crustaceans from the Cretaceous rocks of British Columbia and remarks on the close affinity of the European and North American forms.

569 **Woodworth** (J. B.). Three-toed dinosaur tracks in the Newark group at Avondale, N. J.

Am. Jour. Sci., 3d ser., vol. l, pp. 481–482.

Describes briefly the tracks, which are considered to be identical with those of the Connecticut Valley.

570 **Woolman** (Lewis). Report on artesian wells in southern New Jersey.

N. J. Geol. Surv., Rept. for 1894, pp. 151–221, pls. v–x.

Gives the sections of many well borings cutting Miocene and Cretaceous strata and lists of fossils which were taken from the borings.

571 **Wortman** (J. L.). On the osteology of Agriochœrus.

Am. Mus. Nat. Hist., Bull., vol. vii, pp. 145–178, pl. i, figs. 1–24.

Describes the characters in which Agriochœrus differs from Oreodon and discusses its systematic position. Gives a restoration of Agriochœrus latifrons.

572 —— **Osborn** (H. F.) and. Perissodactyls of the lower Miocene White River beds.

Am. Mus. Nat. Hist., Bull., vol. vii, pp. 343–375, pls. viii–xi, figs. 1–12.

See Osborn (H. F.) and Wortman (J. L.), No. 363.

573 **Wright** (G. Frederick). Observations upon the Glacial phenomena of Newfoundland, Labrador, and southern Greenland.

Am. Jour. Sci., 3d ser., vol. xlix, pp. 86–94.

Describes the glacial striæ of Newfoundland and the evidence of pre-Glacial elevation. Describes the topographic character of the coast of Labrador and the evidences of glacial and subaerial erosion and the glacial phenomena of southern Greenland. Gives the author's conclusions as to the extent of the ice sheet in this region and on the recent date of the Glacial epoch.

574 **Wright** (G. Frederick). Dr. Holst on the continuity of the Glacial period.

Am. Geol., vol. xvi, pp. 396-399 (correspondence).

Quotes from a recent paper by Dr. Holst, "Has there been more than one Ice age in Sweden?" descriptions given of the glacial phenomena of North America.

575 —— Glacial phenomena between Lake Champlain, Lake George, and the Hudson River [New York].

Science, new ser., vol. ii, pp. 673-678.

Decscribes the present and pre-Glacial drainage of the region.

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    - Forbesiocrinus agassizi Hall, Keyes, 257.
    - Fornax ledensis, Scudder, 425.
    - Fraxinus
      - herendeenensis n. sp.,Knowlton,270.
      - quadrangulata, Dawson, G. M., 113.
    - Fusulina cylindrica Fischer, Keyes, 257.
    - Fusus
      - bastropensis, n. sp., Harris, 185.
      - ostrarupis n. sp., Harris, 185.
      - supraplanus n. sp., Cooper, 91.
    - Galerucella picca, Scudder, 425.
    - Gaudryina pupoides d'Orbigny, Woodward and Thomas, 567.
    - Gaza ? aldrichiana n. sp., Harris, 185.
    - Gennæocrinus trijugis Miller, Keyes, 257.
    - Geodromicus stiricidii, Scudder, 425.
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      - abdicata n. sp., Scudder, 427.
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      - minima n. sp., Scudder, 427.
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      glans White, Keyes, 257.
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    Haploconus lineatus Cope, Osborn and Earle, 362.
    Helopora Hall, Ulrich, 485.
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      elegans n. sp., Ulrich, 485.
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      mucronata Ulrich, Ulrich, 485.
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    Hemiphragma n. gen., Ulrich, 485.
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    Hemithlæus kowalevskianus Cope, Osborn and Earle, 362.
    Herpetocrinus flabellicirrus, Bather, 31.
    Heterospongia Ulrich, Winchell and Schuchert, 561.
      subramosa? Ulrich, Winchell and Schuchert, 561.
    Heterotrypa Nicholson, Ulrich, 485.
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      harmonia Billings, Whiteaves, 538.
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    Homothetus arutus n. sp., Matthew, G. F., 316.
    Homotrypa Ulrich, Ulrich, 485.
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      exilis Ulrich, Ulrich, 485.
      ?intercalaris n. sp., Ulrich, 485.
      minnesotensis Ulrich, Ulrich, 485.
      separata n. sp., Ulrich, 485.
      similis Foord, Ulrich, 485.
      subramosa Ulrich, Ulrich, 485.
      tuberculata n. sp., Ulrich, 485.
    Homotrypella Ulrich, Ulrich, 485.
      instabilis Ulrich, Ulrich, 485.
      multiporata n. sp., Ulrich, 485.
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    Ilionia galtensis Whiteaves, Whiteaves, 538.
    Illænus
      abeynensis n. sp., Whiteaves, 538.
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    - punctatus n. sp., Miller and Gurley, 346.
  - Indrodon malaris Cope, Osborn and Earle, 362.
  - Inoceramus comancheana, Stanton, 459.
  - Irites alaskana Lesquereux, Knowlton, 270.
  - Ischadites Murchison emende Hinde, Winchell and Schuchert, 561.
    - iowensis Owen, sp., Winchell and Schuchert, 561.
  - Isocardia ? tenuidens Whitfield, Dall, 107.
  - Juglans
    - debeyana (Heer) Lesq., Lesquereux, 293.
    - townsendi n. sp., Knowlton, 270.
  - Lagena
    - aspera Reuss, Woodward and Thomas, 567.
    - favosa-punctata Brady, Woodward and Thomas, 567.
    - hispida Reuss, Woodward and Thomas, 567.
  - Lathrobium interglaciale, Scudder, 425.
  - Latirus singleyi n. sp., Harris, 185.
  - Laurus
    - nebrascensis Lesq., Lesquereux, 293.
    - plutonia ? Heer, Lesquereux, 293.
    - salicifolia, Knowlton, 273.
  - Lecythiocrinus olliculæformis White, Keyes, 257.
  - Leda
    - bastropensis n. sp., Harris, 185.
    - houstonia n. sp., Harris, 185.
  - Leperditia
    - ? minor n. sp., Matthew, 319.
    - ? primæva n. sp., Matthew, 319.
    - ? steadi, Matthew, 319.
    - sublævis (Shumard), Keyes, 257.
    - ? ventricosa, Matthew, 319.
  - Lepidechinus
    - imbricatus Hall, Keyes, 260.
    - rarispinus Hall, Keyes, 260.
    - squamosus (Meek and Worthen), Keyes, 260.
  - Lepidesthes
    - colletti White, Keyes, 260.
    - coreyi Meek and Worthen, Keyes, 260.
  - Lepiditta sigillata, Matthew, 319.
  - Lepidolites Ulrich, Winchell and Schuchert, 561.
  - Lepidurus productus, Beecher, 40.
  - Leptæna Dalman, Winchell and Schuchert, 562.
    - charlottæ W. and S., Winchell and Schuchert, 562.
    - sericea, Sowerby, Keyes, 258.
    - unicostata Meek and Worthen, sp., Winchell and Schuchert, 562.
  - Leptodora hyalina, Beecher, 40.
  - Leptotrypa Ulrich, Ulrich, 485.
    - acervulosa n. sp., Ulrich, 485.
    - claviformis n. sp., Ulrich, 485.
    - hexagonalis Ulrich, Ulrich, 485.
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  - Lernædiscus porcellanæ, Beecher, 40.
  - Levifusus trabeatoides, n. sp., Harris, 185.

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- *Genera and species described*—Continued.
  - Lichenaria
    - minor n. sp. (Ulrich), Winchell and Schuchert, 561.
    - typa n. gen et sp., Winchell and Schuchert, 561.
  - Lima retifera Shumard, Keyes, 258.
  - Limnaida hermanni, Beecher, 40.
  - Limnea contracosta, n. sp., Cooper, 91.
    - nitidula Meek, White, 535.
  - Limonius impunctus, Scudder, 425.
  - Limulus polyphemus, Beecher, 40.
  - Lingula Bruguière, Winchell and Schuchert, 562.
    - antiqua, James, 235.
    - beltrami n. sp., Winchell and Schuchert, 562.
    - canadensis Billings ?, Winchell and Schuchert, 562.
    - clathrata n. sp., Winchell and Schuchert, 562.
    - cobourgensis Billings ?, Winchell and Schuchert, 562.
    - elderi Whitfield, Winchell and Schuchert, 562.
    - eva Billings, Winchell and Schuchert, 562.
    - iowensis Owen, Winchell and Schuchert. 562.
    - modesta Ulrich, Winchell and Schuchert, 562.
    - philomela Billings, Winchell and Schuchert, 562.
    - riciniformis Hall, Winchell and Schuchert, 562.
      - var. galensis W. and S., Winchell and Schuchert, 562.
    - umbonata Cox, Keyes, 258.
    - (Glossina) hurlburti N. H. Winchell, Winchell and Schuchert, 562.
      - deflecta W. and S., Winchell and Schuchert, 562.
  - Lingulasma Ulrich, Winchell and Schuchert, 562.
    - galensis, Winchell and Schuchert, 562.
  - Lingulella
    - ? inflata, Matthew, 319.
      - var. ovalis n. var., Matthew, 319.
    - iamborni Meek, Keyes, 258.
    - martinensis, Matthew, 319.
      - cf. granvillensis Walcott, Matthew, 319.
  - Linnarssonia transversa Hartt, Matthew, 319.
  - Lioplex ? endlichi White, White, 535.
  - Liostracus onangondianus, Beecher, 40.
  - Liriodendron, Hollick, 226.
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  - Liropecten estrellanus Conrad, Cooper, 91.
  - Lithapium, Matthew, G. F., 318.
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  - Lituites ? complanatus Shumard, Keyes, 258.
  - Lophiodon Cuvier, Osborn and Wortman, 363.
  - Lophophyllum proliferum (McChesney), Keyes, 257.
  - Loricera
    - glacialis, Scudder, 425.
    - ? lutosa, Scudder, 425.

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- **Loxonema**
  - **boydii** Hall, Whiteaves, 538.
  - **magnum** Whitfield, var., Whiteaves, 538.
  - **multicosta** Meek and Worthen, Keyes, 258.
  - **scitulum** Meek and Worthen, Keyes, 258.
  - **tenuilineatum** (Shumard), Keyes, 258.
- **Loxoplocus solutus** Whiteaves, Whiteaves, 538.
- **Lucifer**, Beecher, 40.
- **Lutraria senna**, James, 236.
- **Lyropora retrosa** Meek and Worthen, Keyes, 258.
- **Machærodus crassidens** Cragin, Williston, 543.
- **Maclurea magna** (Le Sueur), Keyes, 258.
- **Macrodon**
  - **obsoletus** Meek, Keyes, 258.
  - **sangamonensis?** Worthen. Keyes, 258.
  - **tenuistriatus** Meek and Worthen, Keyes, 258.
- **Mactra antiqua**, Stanton, 459.
- **Magnolia alternans** Heer, Lesquereux, 293.
- **Mangilia suturalis** n. sp., Cooper, 91.
- **Martesia texana** n. sp., Harris, 185.
- **Matamynodon planifrons** S. & O., Osborn and Wortman, 363.
- **Mazonia** Meek and Worthen, Scudder, 426.
  - **acadica**, Scudder, 426.
- **Mazonia** sp., Scudder, 426.
- **Medusites lindstromii**, James, 235.
- **Meekella striatocostata** (Cox), Keyes, 258.
- **Megalomus canadensis** Hall, Whiteaves, 538.
- **Megerlia dubitanda** n. sp., Cooper, 91.
- **Megistocrinus**
  - **brevicronis** Hall, Keyes, 257.
  - **evansi** (Owen and Shumard), Keyes, 257.
  - **hemisphericus** n. sp., Miller and Gurley 346.
  - **ornatus** n. sp., Miller and Gurley, 346.
- **Melampus clarkii** n. sp., White, 535.
- **Melocrinus sampsoni** n. sp., Miller and Gurley, 346.
- **Melonites**
  - **crassus** Hambach, Keyes, 260.
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- **Meretrix texacola** n. sp., Harris, 185.
- **Meristina nitida**, Girty, 166.
- **Mesalia claibornensis** Con., Harris, 185.
- **Mesocetus siphunculus** n. sp., Cope, 92.
- **Mesohippus** Marsh, Osborn and Wortman, 363.
  - **copei** n. sp., Osborn and Wortman, 363.
  - **intermedius** n. sp., Osborn and Wortman, 363.
- **Mesonyx uintensis**, Osborn, 361.
- **Mesotrypa** n. gen., Ulrich, 485.
  - **discoidea** n. sp., Ulrich, 485.
  - **infida** Ulrich, Ulrich, 485.
  - **quebecensis** Ami sp., Ulrich, 485.
  - **? rotunda** n. sp., Ulrich, 485.
  - **? spinosa** n. sp., Ulrich, 485.

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- **Metablastus**
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  - **lineatus** (Shumard), Keyes, 257.
  - **wortheni** (Hall), Keyes, 257.
- **Miacis uintensis** n. sp., Osborn 361.
- **Michelinia**, Girty, 166.
- **Micmacca** n. gen., Matthew, 319.
  - **matthevi** n. sp., Matthew, 319.
  - **? plana** n. sp., Matthew, 319.
  - **recurva** n. sp., Matthew, 319.
  - **van-ingeni** n. sp., Matthew, 319.
- **Microblattina** n. gen., Scudder, 427.
  - **perdita**, n. sp., Scudder, 427.
- **Microsyops uintensis** n. sp., Osborn, 361.
- **Mioclænus** Cope, Osborn and Earle, 362.
  - **turgidus** Cope, Osborne and Earle, 362.
- **Mitoclema** Ulrich, Ulrich, 485.
  - **? mundulum** Ulrich, Ulrich, 485.
- **Mitra simplicissima** n. sp., Cooper, 91.
- **Modiola**
  - **houstonia** n. sp., Harris, 185.
  - **pealei** n. sp., White, 535.
- **Moina rectirostris**, Beecher, 40.
- **Monomerella**
  - **durhamensis** n. sp., Whiteaves, 538.
  - sp. undet., Whiteaves, 538.
- **Monopteria**
  - **gibbosa** (Meek and Worthen), Keyes, 258.
  - **longispina** (Cox), Keyes, 258.
- **Monotis? gregaria** Meek and Worthen, Keyes, 258.
- **Monotrypa** Nicholson, Ulrich, 485.
  - **intabulata** n. sp., Ulrich, 485.
  - **magna** n. sp., Ulrich, 485.
  - **nodosa** n. sp., Ulrich, 485.
  - **(? Chætetes) cumulata** n. sp., Ulrich, 485.
- **Monticulipora** d'Orbigny, Ulrich, 485.
  - **arborea** n. sp., Ulrich, 485.
  - **aspera** Ulrich, James, 237.
  - **asperula** Ulrich, James, 237.
  - **calceola** Miller and Dyer, James, 237.
  - **?cannonensis** n. sp., Ulrich, 485.
  - **clavacoidea** James, James, 237.
  - **cleavelandi** James, James, 237.
  - **clintonensis** James, James, 237.
  - **compressa** Ulrich, James, 237.
  - **contexta** Ulrich, James, 237.
  - **crustulata** James, James, 237.
  - **cumulata** Ulrich, James, 237.
  - **curvata** Ulrich, James, 237.
  - **dawsoni** Nicholson, James, 237.
  - **dychei** James, James, 237.
  - **flabellaris** Ulrich, James, 237.
  - **frondosa** d'Orbigny, James, 237.
  - **fusiformis** Whitfield, James, 237.
  - **grandis** Ulrich, Ulrich, 485.
  - **incompta** n. sp., Ulrich, 485.
  - **inflecta** Ulrich, James, 237.
  - **lævis** Ulrich, James, 237.
  - **lamellosa** Ulrich, James, 237.
  - **mammulata** d'Orbigny, James, 237.
  - **molesta** Nicholson, James, 237.
  - **ortoni** Nicholson, James, 237.
  - **papillata** McCoy, James, 237.
  - **parasitica** Ulrich, James, 237.

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      prolifica Ulrich, James, 237.
      pustulosa Ulrich, James, 237.
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      singularis Ulrich, James, 237.
      stidhami Ulrich, James, 237.
      tuberculata Edw. and H., James, 237.
      uniformis Ulrich, James, 237.
      vaupeli Ulrich, James, 237.
      verrucosa n. sp., James, 237.
      wetherbyi Ulrich, Ulrich, 485.
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    Mulina minor Whitfield, Dall, 107.
    Murchisonia
      bivittata Hall, Whiteaves, 538.
      boylei Nicholson, Whiteaves, 538.
      carinifera Shumard, Keyes, 258.
      logani Hall, Whiteaves, 538.
      longispira Hall, Whiteaves, 538.
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      macrospira Hall, Whiteaves, 538.
      melaniaformis Shumard, Keyes, 258.
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    Murex
      fusates n. sp., Harris, 185.
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    Myalina
      kansasensis Shumard, Keyes, 258.
      recurvirostris Meek and Worthen, Keyes, 258.
      subquadrata Shumard, Keyes, 258.
      swallovi McChesney, Keyes, 258.
    Myelodatylus, Bather, 31.
    Mylacridæ ? sp., Scudder, 427.
    Mylacris
      ampla n. sp., Scudder, 427.
      anthracophila, Scudder, 427.
      antiqua, Scudder, 427.
      elongata n. sp., Scudder, 427.
      gurleyi n. sp., Scudder, 427.
      packardii, Scudder, 427.
    Myolodon
      ? harlani Leidy, Williston, 543.
      harlanii Owen, Cope, 94.
      renidens n. sp., Cope, 94.
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    Myrica
      (Comptonia) cuspidata (Lesquereux), Dawson, Knowlton, 270.
      præmissa Lesquereux sp., Knowlton, 270.
    Myses ferruginea, Beecher, 40.
    Mysis, Beecher, 40.
    Mytilus dichotomus n. sp., Cooper, 91.
    Nanno aulema, Hyatt, 232.
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    Nautilus, Hyatt, 232.
      forbesianus McChesney, Keyes, 258.
      occidentalis Swallow, Keyes, 258.
      missouriensis Swallow, Keyes, 258.
      ponderosus White, Keyes, 258.
      winslowi Meek and Worthen, Keyes, 258.
    Nebalia geoffroyi, Beecher, 40.
    Nebria paleomelas, Scudder, 425.
    Nematopora Ulrich, Ulrich, 485.
      conferta Ulrich, Ulrich, 485.
      delicatula Ulrich, Ulrich, 485.
      granosa Ulrich, Ulrich, 485.
      ovalis Ulrich, Ulrich, 485.
    Neritina
      naticiformis White, White, 535.
      stantoni n. sp., White, 535.
    Nicholsonella Ulrich, Ulrich, 485.
      laminata n. sp., Ulrich, 485.
      ponderosa ? Ulrich, Ulrich, 485.
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    Nonionina scapha Fichtel and Moll. sp., Woodward and Thomas, 567.
    Nucleospira pisiformis Hall, Keyes, 258.
    Nucula
      catherina, Stanton, 459.
      ventricosa Hall, Keyes, 258.
    Nuculana bellistriata Stevens, Keyes, 258.
    Obolella nitida Ford ?, Matthew, 319.
    Obolus
      (Botsfordia) pulchra, Matthew, 319.
      pristinus n. sp., Matthew, 319.
    Ogygia, Beecher, 40.
    Oldhamia (Murchisonites) occidens n. sp., Walcott, 512.
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    Oligoporus
      coreyi Meek and Worthen, Keyes 260.
      danæ (Meek and Worthen), Keyes, 257, 260.
      mutatus n. sp., Keyes, 257, 260.
      nobilis Meek and Worthen, Keyes, 260.
      parvus Hambach, Keyes, 260.
    Omphalotrochus springvalensis (White), Keyes, 258.
    Onychocrinus monroensis (Meek and Worthen), Keyes, 257.
    Onychodectes
      rarus n. sp., Osborn and Earle, 362.
      tissonensis Cope, Osborn and Earle, 362.
    Operculina
      complanata Defrance sp., Woodward and Thomas, 567.
        var. granulosa Leymerie, Woodward and Thomas, 567.
    Orbiculoidea d'Orbigny, Winchell and Schuchert, 562.
      lamellosa Hall ?, Winchell and Schuchert, 562.
    Orbulina ?
      intermedia n. sp., Matthew, 319.
      ? ingens n. sp., Matthew, 319.
      ovalis n. sp., Matthew, 319.
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  - Oreodon, Wortman, 571.
  - Ornithostoma, Williston, 545.
  - Orophocrinus stilliformis (Owen and Shumard), Keyes, 257.
  - Orthis Dalman emend Hall., Winchell and Schuchert, 562.
    - amœna N. H. Winchell, Winchell and Schuchert, 562.
    - burlingtonensis Hall, Keyes, 258.
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BULLETIN

OF THE

UNITED STATES GEOLOGICAL SURVEY

No. 149

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CHARLES D. WALCOTT, DIRECTOR

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FOR

THE YEAR 1896

BY

FRED BOUGHTON WEEKS

WASHINGTON
GOVERNMENT PRINTING OFFICE
1897

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LETTER OF TRANSMITTAL.

Department of the Interior,
United States Geological Survey,
Division of Geology,
Washington, D. C., May 27, 1897.

Sir: I have the honor to transmit herewith the manuscript of a Bibliography and Index of North American Geology, Paleontology, Petrology, and Mineralogy for the Year 1896, and to request that it be published as a bulletin of the Survey.

Very respectfully,

F. B. Weeks.

Hon. Charles D. Walcott,
Director United States Geological Survey.

OCT 25 1898

BIBLIOGRAPHY AND INDEX OF NORTH AMERICAN GEOLOGY, PALEONTOLOGY, PETROLOGY, AND MINERALOGY FOR THE YEAR 1896.

By **Fred Boughton Weeks.**

INTRODUCTION.

The method of preparing and arranging the material of the Bibliography and Index for 1896 is similar to that adopted for the previous publications on this subject (Bulletins Nos. 130, 135, and 146). A number of periodicals and transactions of societies not heretofore examined are included in the present work, and are given in the list of publications examined. Several papers that should have been entered in the previous bulletins are here recorded, and the date of publication is given with each entry (see page 98).

Bibliography.—The bibliography consists of full titles of separate papers, classified by authors, an abbreviated reference to the publication in which the paper is printed, and a brief summary of the contents, each paper being numbered for index reference. The extent of papers less than a single page in length is indicated as ⅛ p., 5 l. (lines).

Index.—The subject headings, their subdivisions and arrangement, are shown in the Classified Key to the Index. They comprise geographic, geologic, mineralogic, paleontologic, and petrologic subdivisions. Under Economic Geology is given a list of useful minerals and ores described in publications examined; under Mineralogy, a list of minerals described in such publications; under Paleontology, a list of genera and species of fossils therein described, and under Petrology, a list of rocks described, reference being made in each case, by author's name and number of article in the Bibliography, to the paper in which the fossil, mineral, or rock is described.

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4 —— [Review of "A handbook of rocks for use without the microscope," by J. F. Kemp.]

Science, new ser., vol. iv, pp. 764–765, 1896.

5 —— and **Harrington** (B. J.). On a new alkali hornblende and a titaniferous andradite from the nepheline-syenite of Dungannon, Hastings County, Ontario.

Am. Jour. Sci., 4th ser., vol. i, pp. 210–218; Can. Rec. Sci., vol. vii, pp. 77–88, 1896.

Describes the microscopic characters of the hornblende and garnet, and gives their chemical analyses.

6 **Adams** (George I.). A geologic section from Galena to Wellington [Kansas].

Univ. Geol. Surv. of Kans., vol. i, pp. 16–30, pls. i, ix, 1896.

Describes the lithologic character and succession of the rocks forming the Carboniferous series in this region.

7 **Adams** (George I.). A section from Manhattan to Abilene [Kansas].

Univ. Geol. Surv. of Kans., vol. i, pp. 124–128, pl. vi, fig. 6, 1896.

Gives the sections at Manhattan, Fort Riley, and Abilene, Kans., of the Carboniferous and Permo-Carboniferous beds.

8 —— The extinct Felidæ of North America.

Am. Jour. Sci., 4th ser., vol. i, pp. 419–444, pls. x–xii, 1896.

Describes the osteology of Hoplophoneus primævus and gives a brief historical sketch, description, and figures of the several species of Hoplophoneus. Discusses the nomenclature, synonomy, dentition, succession of genera, and the present and proposed phylogeny of the Felidæ.

9 **Agassiz** (Alexander). The Florida elevated reef. With notes on the geology of southern Florida by Leon S. Griswold.

Harv. Coll., Mus. Comp. Zool., Bull., vol. xxviii, No. 2, pp. 29–62, 26 pls., 1896.

Describes the character and extent of the elevated reef of Florida and discusses its origin.

10 **Aguilera** (José G.). Fauna fosil de la Sierra de Catorce San Luis Potosi.

Comision geol. de Mexico, Bull., No. 1, 55 pp., 24 pls., 1895.

Describes fossils from the Jurassic formation, with a brief discussion of the occurrence of the Jurassic in Mexico.

11 **Aldrich** (T. H.). New or little known Tertiary Mollusca from Alabama and Texas.

Am. Pal., Bull., vol. i, No. 2, pp. 1–19, pls. 1–5, 1895.

Describes fossils from Tertiary beds, including a number of new species.

12 **Ami** (Henry M.). Preliminary lists of the organic remains occurring in the various geological formations comprised in the southwest quarter sheet map of the Eastern Townships of the Province of Quebec.

Canada Geol. Surv., new ser., vol. vii, Rept. J, Appendix, pp. 113–157, 1896.

13 —— Notes on the Canadian fossil Bryozoa.

Can. Rec. Sci., vol. vi, pp. 222–229, 1895.

Names the genera and species of Canadian fossil Bryozoa, including references to the literature.

14 —— Notes on some fossils from the Trenton of Highgate Springs, Vt., near the Canadian boundary line.

Ottawa Nat., vol. ix, pp. 215–216, 1896.

Gives list of fossils collected at this locality.

15 —— Note on Cardinia subangulata Dawson and Arca punctifer Dawson.

Ottawa Nat., vol. x, p. 44, 1896.

These names were preoccupied, and C. angustifera and A. puncticostata are proposed.

16 **Ami** (Henry M.). New species of graptolites from Canada.

Ottawa Nat., vol. x, pp. 145–147, 1896.

Gives lists of graptolites from Point Levis and other localities in Quebec.

17 **Argall** (Philip). [Geology of Cripple Creek district, Colorado.]

In discussion of paper by Whitman Cross on the same subject. See No. 150.

18 **Austin** (W. L.). The nickel deposits near Riddles, Oregon.

Read before the Colorado Scientific Society, in Denver, Colo., Jan. 6, 1896, 27 pp., 10 figs.

Describes the geologic features of the region and the chemical and mineralogic characters and occurrence of the ores.

B.

19 **Bagg** (R. M.). [Protozoa from the Eocene deposits of Delaware, Maryland, and Virginia.]

U. S. Geol. Surv., Bull. No. 141, pp. 91–92, 1896.

Describes one species and gives a list of Eocene species occurring at various localities in the region.

20 —— Protozoa [Eocene fauna of the Middle Atlantic slope].

Johns Hopkins Univ. Circ., vol. xv, p. 6 (½ p.), 1895.

Describes one new species and gives a list of other foraminifera.

21 —— The Cretaceous Foraminifera of New Jersey.

Johns Hopkins Univ. Circ., vol. xv, pp. 10–12, 1895.

Gives a list of the Foraminifera and describes new species.

22 **Bailey** (L. W.). Notes on the geology and botany of Digby Neck [Nova Scotia].

N. S. Inst. Sci., Proc. and Trans., 2d ser., vol. ii, pp. 68–82, pls. iv–vi, 1896.

Describes the physiographic and general geologic features of the region.

23 —— Some Nova Scotian illustrations of dynamical geology.

N. S. Inst. Sci., Proc. and Trans., 2d ser., vol. ii, pp. 180–194, pls. vii–ix, 1896.

Describes sand hill dunes, glacial phenomena, metamorphism, and vein and contact phenomena.

24 **Bain** (Harry Foster). Geology of Washington County [Iowa].

Iowa Geol. Surv., vol. v, pp. 113–173, pl. iii, figs. 9–15, 1896.

Describes the physiography and drainage of the region, the character, distribution, and geologic structure of the Carboniferous and Pleistocene formations, including sections at typical localities, and the occurrence of clays, building stones, water supply, and road materials. Includes a geologic map of the county.

25 **Bain** (Harry Foster.). Geology of Woodbury County [Iowa].

Iowa Geol. Surv., vol. v, pp. 243–299, pls. v–vi, figs. 32–43, 1896.

Describes the physiography of the county, the stratigraphy of typical sections, the distribution and structure of the Cretaceous, pre-Glacial and Glacial deposits, and the occurrence of clay, cement, and water supply. Includes a geologic map of the county and one of the superficial deposits.

26 —— Geology of Appanoose County [Iowa].

Iowa Geol. Surv., vol. v, pp. 363–438, pls. xi–xiv, figs. 52–72, 1896.

Describes the topography and drainage of the county, the lithologic character, distribution, and structure of the Carboniferous and Glacial strata, and the occurrence of coal and clays. Includes a geologic map of the county.

27 —— [Review of "General relations of the granitic rocks in the Middle Atlantic Piedmont plateau," by G. H. Williams.]

Jour. of Geol., vol. iv, pp. 638–640, 1896.

28 **B[ain]** (H. F.). [Abstract. University Geological Survey of Kansas, vol. i, by Erasmus Haworth and assistants.]

Jour. of Geol., vol. iv, pp. 645–646, 1896.

29 —— [Review of "Iowa Geological Survey, vol. v, Annual Report 1895."]

Jour. of Geol., vol. iv, pp. 649–651, 1896.

30 —— [Review of "Monoclinic pyroxenes of New York State," by Heinrich Ries.]

Jour. of Geol., vol. iv, pp. 651–652, 1896.

31 **Bain** (Harry Foster). Machine coal mining in Iowa.

Mineral Industry, 1895, pp. 195–200, 1896.

Gives the sections of the Mystic coal beds.

32 **Barbour** (Erwin Hinckley). Progress made in the study of Daemonelix.

Extract from publication No. V, Neb. Acad. Sci. Proc. 1894–95.

Describes and illustrates the progress of the author's studies.

33 —— The deposits of volcanic ash in Nebraska.

Extract from publication No. V, Neb. Acad. Sci. Proc., 1894–95.

Describes the character, occurrence, and distribution of the volcanic ash beds.

34 —— The diatomaceous deposits of Nebraska.

Extract from publication No. V, Neb. Acad. Sci. Proc., 1894–95.

Describes the character and occurrence of the diatomaceous strata and presents a list of fossil diatoms determined by Clarence J. Elmore.

35 **Barlow** (Alfred E.). On some dykes containing "huronite."

Ottawa Nat., vol. ix, pp. 25–47, 1896.

See Bibliography and Index for 1895, No. 28.

36 —— **Ells** (R. W.) and. The physical features and geology of the route of the proposed Ottawa canal between the St. Lawrence River and Lake Huron.

See Ells (R. W.) and Barlow (A. E.) No. 193.

37 **Barrell** (Robert W.). Elkhorn Mountain and Rock Creek district of the Blue Mountains, Oregon.

Eng. and Mg. Jour., vol. lxii, p. 128, 1896.

Describes the occurrence of gold and silver ores in this region.

38 **Barton** (George H.). Evidence of the former extension of glacial action on the west coast of Greenland, and in Labrador and Baffinland.

Am. Geol., vol. xviii, pp. 379–384, 1896.

Discusses the evidences of the former extension of the ice sheet in these regions.

39 **Bartsch** (Paul). Notes on the Cretaceous flora of western Iowa.

Iowa State Univ., Lab. of Nat. Hist., Bull., vol. iii, pp. 178–182, 1896.

Gives a list of fossil plants collected at Holman Cut, Woodbury County, Iowa.

40 **Bascom** (Florence). Volcanic rocks of South Mountain, Pennsylvania.

U. S. Geol. Surv., Bull. No. 136, 124 pp., 28 pls., 1896.

Gives a historical review of geologic surveys in the region and list of bibliographic references. Describes the character, distribution, and age of the sedimentary and eruptive rocks, and the petrographic character of the Cambrian, acid eruptive and basic eruptive rocks, including a discussion of their nomenclature. Gives a list of papers on acid volcanics and devitrification and on spherulites.

41 —— A pre-Tertiary nepheline-bearing rock.

Jour. of Geol., vol. iv, pp. 160–165, 1896.

Gives a description of the megascopic and microscopic characters of a glacial bowlder from Ohio, and discusses the evidences of its age.

42 —— Perido-steatite and diabase.

Phil. Acad. Nat. Sci., Proc., 1896, pp. 219–220, 1896.

Comprises brief notes on the characters of these rocks from near Philadelphia, Pa.

43 **Bashore** (Harvey B.). Notes on Glacial gravels in the lower Susquehanna Valley [Pennsylvania].

Am. Jour. Sci., 4th ser., vol i, pp. 281-282, 1896.

Gives the results of recent observations on the Glacial geology of this region.

43a **Bassler** (R. S.), **Harper** (G. W.) and. Catalogue of the fossils of the Trenton and Cincinnati periods, occurring in the vicinity of Cincinnati, Ohio.

See Harper (G. W.) and Bassler (R. S.) No. 274a.

44 **Bather** (F. A.). [Review of "New and interesting species of Paleozoic fossils," by S. A. Miller and Wm. F. E. Gurley.]

Am. Geol., vol. xvii, pp. 184–186, 1896.

45 **Beadle** (H. M.). Mineral regions of British Columbia.

Eng. and Mg. Jour., vol. lxii, pp. 104–105, 1896.

Describes the occurrence of gold in the Trail Creek mining region, British Columbia.

46 **Beadle** (H. M.). British Columbia mines.
Eng. and Mg. Jour., vol. lxii, pp. 174–176, 1896.
Describes the gold ore bodies of Trail Creek region, British Columbia.

47 **Becker** (George F.). Schistosity and slaty cleavage.
Jour. of Geol., vol. iv, pp. 429–448, figs. 1–5, 1896.
This paper is a continuation of the discussion in a former paper on "Finite homogeneous strain, flow and rupture of rocks." Discusses the structure developed by the deformation of a "solid, homogeneous, viscous, isotropic, not infinitely brittle mass."

48 **Beecher** (Charles E.). The morphology of Triarthrus.
Am. Jour. Sci., 4th ser., vol. i, pp. 251–256, pl. viii; Geol. Mag., dec. 4, vol. iii, pp. 193–200, pl. ix, 1896.
Gives a summary of present knowledge of the structure of Triarthrus and presents a figure showing the natural position of the appendages.

49 —— James Dwight Dana.
Am. Geol., vol. xvii, pp. 1–16, 1896.
Contains a biography and a list of the publications of Professor Dana.

50 —— On a supposed discovery of the antennæ of trilobites by Linnæus in 1759.
Am. Geol., vol. xvii, pp. 303–306, 1896.
Refers to the literature on the subject and gives a list of references.

51 —— On the validity of the family Bohemillidæ Barrande.
Am. Geol., vol. xvii, pp. 360–362, figs. 1–3, 1896.
Discusses the characters and synonymy of Bohemilla stupenda.

52 —— On the occurrence of Silurian strata in the Big Horn Mountains, Wyoming, and in the Black Hills, South Dakota.
Am. Geol., vol. xviii, pp. 31–33, 1896.
Discusses the occurrence of fossils of Niagara and Trenton facies and remarks on the necessity of a knowledge of the complete faunas for purposes of correlation.

53 **Bell** (Andrew). Notes on the building stones of eastern Ontario.
Stone, vol. xii, pp. 565–567, vol. xiii, pp. 24–27, 1896.
Describes the building stones of the Laurentian, Potsdam, Trenton, and Calciferous formations.

54 **Bell** (Robert). Proofs of the rising of the land around Hudson Bay.
Am. Jour. Sci., 4th ser., vol. i, pp. 219–228, 1896.
Reviews the author's observations in this region, which indicate that the country about Hudson Bay is continually rising.

55 **Bennett** (John). A geologic section along the Missouri Pacific Railway, from State Line, Bourbon County, to Yates Center [Kansas].
Univ. Geol. Surv. of Kans., vol. i, pp. 86–98, pl. iv. fig. 4, 1896.
Describes the limestones and shales which make up the Carboniferous series and mentions their contained fossils.

56 **Bennett** (John). A geologic section along the Kansas River from Kansas City to McFarland [Kansas].

Univ. Geol. Surv. of Kans., vol. i, pp. 107-124, pl. vi, fig. 5, 1896.

Gives the section of the Carboniferous strata at various localities and mentions the fossils collected.

57 —— A preliminary catalogue of the invertebrate paleontology of the Carboniferous of Kansas (preliminary).

Univ. Geol. Surv. of Kans., vol. i, pp. 270-310, 1896.

58 —— **Haworth** (Erasmus) and. A geologic section from Baxter Springs [Kansas] to the Nebraska State line.

See Haworth (Erasmus) and Bennett (John), No. 295.

59 **Beyer** (Samuel Walker). Geology of Boone County [Iowa].

Iowa Geol. Surv., vol. v, pp. 177-232, pl. iv, figs. 16-31, 1896.

Describes the topography and drainage, the stratigraphy of typical sections, the distribution of the Carboniferous and Glacial deposits, and the occurrence of coal, building stone, clays, and soils. Includes a geologic map of the county and a map of the surface deposits.

60 —— The spotted slates associated with the Sioux quartzites.

Johns Hopkins Univ. Circ., vol. xv, p. 10, 1895.

Describes the megascopic and microscopic characters of the slates overlying the Sioux quartzite in South Dakota.

61 **Bibbins** (Arthur). Notes on the paleontology of the Potomac formation.

Johns Hopkins Univ. Circ., vol. xv, pp. 17-20, Figs. A to H, 1895.

Describes the general characteristics of the plant and animal remains, with detailed notes on certain localities in Maryland.

62 **Blake** (William P.). Cinnabar in Texas.

Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 68-76, 1896.

Describes the occurrence of cinnabar in western Texas and the character and relations of the associated Tertiary and Cretaceous strata.

63 —— Notes and recollections concerning the mineral resources of northern Georgia and western North Carolina.

Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 796-811, 1896.

Describes the occurrence of gold in Georgia and copper in Tennessee, and mentions the occurrence of certain minerals in the southern Appalachians.

64 —— Gold in granite and plutonic rocks.

Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. 290-298; Abstract: Mining and Scientific Press, vol. lxxiii, p. 296, 1896.

Describes the occurrence of gold in Arizona, California, and South Dakota.

65 —— Gypsum beds in southern Arizona.

Am. Geol., vol. xviii, p. 394 (½ p.) (correspondence), 1896.

Mentions occurrence of gypsum in this region.

66 **Blatchley** (W. S.). A preliminary report on the clays and clay industries of the coal-bearing counties of Indiana.

Ind. Dept. of Geol. and Nat. Res., 20th Ann. Rept., pp. 23–185, pls. i–vii, 1896.

Discusses the origin and classification of clays and describes their distribution and physical and chemical characters in the several counties in Indiana.

67 **Blauvelt** (Harrington). Mineral in basalt.

Eng. and Mg. Jour., vol. lxi, p. 111 (¼ p.), pls. i–ii, 1896.

Describes occurrence of silver and copper in basalt in Yavapai County, Ariz.

68 **Bolton** (H.). The metamorphism of coal.

Colliery Engineering, vol. xvi, No. 1, pp. 254–255, 1896.

Discusses the origin of the metamorphism of coal.

69 **Brainerd** (Ezra) and **Seeley** (Henry M.). The Chazy of Lake Champlain [New York].

Am. Mus. Nat. Hist., Bull., vol. viii, pp. 305–315, 1896.

Gives two vertical sections of the Chazy beds and list of fossils of the various beds, accompanied by geologic sketch maps.

70 **Branner** (John Casper). A bibliography of clays and the ceramic arts.

U. S. Geol. Surv., Bull. No. 143, 114 pp., 1896.

Comprises an author's list of titles of publications.

71 —— Thickness of the Paleozoic sediments in Arkansas.

Am. Jour. Sci., 4th ser., vol. ii, pp. 229–236, with geologic map of Arkansas, 1896.

Describes the distribution of Paleozoic rocks in Arkansas and gives the thicknesses of the different series.

72 —— [Coal measures of Arkansas.]

Am. Phil. Soc., Proc., vol. xxxv, p. 214 (¼ p.). In article by J. P. Smith on "Marine Coal Measures of Arkansas."

73 —— The phosphate deposits of Arkansas.

Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. 580–598, 1896.

Describes the character of the Devonian strata in which the deposits occur and the occurrence and characteristics of the phosphate material, and discusses its origin. Gives chemical analyses.

74 **Brewer** (William M.). A preliminary report on the upper gold belt of Alabama. In the counties of Cleburne, Randolph, Clay, Talladega, Elmore, Coosa, and Tallapoosa.

Ala. Geol. Surv., Bull. No. 5, pp. 1–105, 3 pls., 1896.

Describes the topographic and geologic features of the region, mining operations, and occurrence of gold in the region.

75 —— The gold regions of Georgia and Alabama.

Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 569–587, 1896.

Comprises an account of the present condition of the gold mining industry in Georgia and Alabama.

76 **Brewer** (William M.). Further notes on the Alabama and Georgia gold fields.

Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. 464-472, 1896.

Contains notes on the occurrence of gold ores and associated rocks in these States.

77 —— Mineral resources along the line of the East Tennessee, Virginia, and Georgia division of the Southern Railway.

Eng. and Mg. Jour., vol. lxi, pp. 65-66, 1896.

Includes general remarks on the occurrence of bauxite, iron, lead, and zinc ores in this region.

78 —— Gold mining in Alabama.

Ala. Ind. and Sci. Soc., Proc., vol. vi, pp. 42-49, 1896.

Gives a general description of the occurrence of gold in certain regions of Alabama.

79 —— The manganese ores of Georgia.

Ala. Ind. and Sci. Soc., Proc., vol. vi, pt. 2, pp. 72-78, 1896.

Gives general notes on the manganese ore bodies in Georgia.

80 **Broadhead** (Garland C.). Coal Measures of Missouri.

Mo. Geol. Surv., vol. viii, pp. 355-395, 1895.

Describes the general character and distribution of the Coal Measure rocks of Missouri and gives several vertical sections.

81 —— The Devonian of North Missouri, with notice of a new fossil.

Am. Jour. Sci., 4th ser., vol. ii, pp. 237-239, figs. 1-7, 1896.

Mentions the Devonian fossils found in this region and describes Pleurotomaria providencis.

82 **Brock** (R. W.), **Miller** (W. G.) and. Some dikes cutting the Laurentian system, counties of Frontenac, Leeds, and Lanark, Ontario.

See Miller (W. G.) and Brock (R. W.), No. 512.

83 **Brooks** (Alfred H.). Preliminary petrographic notes on some metamorphic rocks from eastern Alabama.

Ala. Geol. Surv., Bull. No. 5, pp. 177-197, 1896.

Describes the petrographic characters of some metamorphic and igneous rocks.

84 —— **Taff** (J. A.) and. Buckhannon folio, West Virginia.

See Taff (J. A.) and Brooks (A. H.), No. 657.

85 **Brown** (Amos P.). The crystallization of molybdenite.

Phil. Acad. Nat. Sci., Proc. 1896, pp. 210-211, 1896.

Describes crystallographic characters of molybdenite.

86 **Browne** (David H.). Segregation in ores and mattes.

Can. Rec. Sci., vol. vii, pp. 176-190, 1896.

Gives a brief description of the Sudbury, Ontario, copper ore deposits.

87 **Bryson** (John). Good Ground, Long Island [New York].

Am. Geol., vol. xviii, pp. 329-331 (correspondence), 1896.

Describes the glacial phenomena of the region.

88 **Burdsal** (C. W.). Cedar Canyon mining district [Washington].

Mining, vol. i, pp. 191–192, 1896.

Describes briefly the geology of the region and the occurrence of silver ores.

C.

89 **Calvin** (Samuel). Geology of Jones County [Iowa].

Iowa Geol. Surv., vol. v, pp. 33–112, pls. i–ii, figs. 1–8, 1896.

Describes the physiography, the stratigraphic features of the Niagara, Carboniferous, and Pleistocene deposits, including local details, and the occurrence of building stones, soils, lime, clays, road materials, and water supply. Includes geologic map of the county.

90 —— The Le Claire limestone [Iowa].

Iowa State Univ., Lab. of Nat. Hist., Bull., vol. iii, pp. 183–189, pls. i–ii, 1896.

Describes the character and distribution of the Le Claire limestone, a subdivision of the Niagara, and the phenomena of oblique bedding.

91 —— The Le Claire limestone.

Iowa Acad. Sci., Proc., vol. iii, pp. 52–58, pls. i–ii, fig. 2, 1896.

Describes peculiar features of deposition in the Niagara strata in portions of Iowa, and discusses its origin.

92 —— The Buchanan gravels; an inter-Glacial deposit in Buchanan County, Iowa.

Iowa Acad. Sci., Proc., vol. iii, pp. 58–60, pls. iii–iv, 1896.

Describes the occurrence of Glacial gravels.

93 —— The Buchanan gravels; an inter-Glacial deposit in Buchanan County, Iowa.

Am. Geol., vol. xvii, pp. 76–78, pls. iv–v, 1896.

94 —— Apparent anomalies of stratification in the Postville well [Iowa].

Am. Geol., vol. xvii, pp. 195–203, 1896.

Describes the characteristics of the Galena and Trenton limestones of the region and discusses some of the peculiarities of deposition.

95 —— The Cedar Valley quarry [Iowa].

Eng. and Mg. Jour., vol. lxi, p. 544, fig. 1, 1896.

Describes the occurrence of building stone at this locality, of Upper Siluran age.

96 **Campbell** (Marius R.). Pocahontas folio, Virginia and West Virginia.

U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 26, 1896.

Describes the physiographic features, the character and distribution of rocks of Cambrian, Silurian, Devonian, and Carboniferous age, the geologic structure of the region and occurrence of coal, iron ores, and soils. Includes topographic, geologic, and structure section maps and a sheet of columnar sections.

97 **Campbell** (Marius R.). Drainage modifications and their interpretation.

Jour. of Geol., vol. iv, pp. 567–581 and 657–678, 1896.

Discusses the principles of drainage modification, the criteria for determining stream modifications, and the characteristics of Appalachian drainage.

98 —— Rapid section work in horizontal rocks.

Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. 298–315, pls. i–iv, 1896.

Describes methods of studying areal geology in regions where the strata lie in a nearly horizontal position.

99 —— and **Mendenhall** (Walter C.). Geologic section along the New and Kanawha rivers in West Virginia.

U. S. Geol. Surv., 17th Ann. Rept., Pt. II, 39 pp., pls. xxxviii–xlix, 1896.

Describes the physiography, geologic structure, and stratigraphic features of the members of the Carboniferous series, and the occurrence of coal, and gives chemical analyses. Includes a sheet of geologic cross sections.

100 **Carlyle** (William A.). Report on Trail Creek Mining District, British Columbia.

Mining and Scientific Press, vol. lxxiii, pp. 236–237; Mining, vol. ii, pp. 95–100, 124–128, and 143–151, 1896.

Describes briefly the occurrence of the gold, silver, and copper ores and the associated igneous rocks on pages 144–147.

101 —— Report on the Slocan, Nelson, and Ainsworth mining districts in West Kootenay, British Columbia.

Bureau of Mines, B. C., Bull. No. 3, 95 pp. with map, 1896.

Describes the general geology of the region, the occurrence of the igneous rocks, and of the gold and silver lead ores.

102 **Carnot** (Adolphe). Sur les variations observées dans la composition des apatites, des phosphorites, et des phosphates sédimentaires. Remarques sur le gisement et le mode de formation de ces phosphates.

Annales des Mines, vol. x, pp. 137–231, 1896.

Discusses the character and formation of the South Carolina and Florida phosphate deposits.

103 **Chalmers** (Robert). Report on the surface geology of eastern New Brunswick, northwestern Nova Scotia and a portion of Prince Edward Island.

Canada Geol. Surv., new ser., vol. vii, Rept. M, 149 pp., 5 pls., 1896.

Describes the physiography, the character and distribution of the Pleistocene deposits, and glacial geology of the region. Discusses the evidences of Tertiary and post-Tertiary changes of level.

104 —— Pleistocene marine shore lines on the south side of the St. Lawrence Valley.

Am. Jour. Sci., 4th ser., vol. i, pp. 302–308, 1896.

Describes the topographic character of the region and the occurrence of the terraces. Gives a table showing the elevation of the shore lines along the north side of Notre Dame range, south of the St. Lawrence.

105 **Chamberlin** (T. C.). Alternative interpretations. [Discussion of history of Lake Agassiz.]

U. S. Geol. Surv., Mon. xxv, pp. 244–251, 1896.

Discusses Upham's interpretation of the glacial history of Lake Agassiz.

106 —— [The age of the second terrace on the Ohio at Brilliant, Ohio.]

Jour. of Geol., vol. iv, pp. 219–221, 1896.

In discussion of a paper by G. Frederick Wright on the same subject.

107 —— Glacial studies in Greenland, IX.

Jour. of Geol., vol. iv, pp. 582–592, pls. 60–63, 1896.

Describes the Tuktoo glacier. This paper is a continuation of the description of the glaciers of Greenland in papers noticed in the Bibliography and Index for 1895.

108 **C[hamberlin]** (T. C.). [Review of "Greenland ice fields and life in the North Atlantic, with a new discussion of the causes of the Ice age," by G. Frederick Wright and Warren Upham].

Jour. of Geol., vol. iv, pp. 632–636, figs. 1–2, 1896.

109 —— [Review of "Ice work, present and past," by T. G. Bonney.]

Jour. of Geol., vol. iv, pp. 636–638, 1896.

110 **Chamberlin** (T. C.) Salient points concerning the geology of north Greenland.

Jour. of Geol., vol. iv, pp. 769–810, 33 figs., 1896.

Describes the glacial geology of the region.

111 —— [Nomenclature of glacial deposits in the Mississippi Valley.]

Jour. of Geol., vol. iv, pp. 872–876, 1896.

Discusses the use of the terms, Kansan, Iowan, Wisconsin, Aftonian, and Albertan, with remarks on their correlation.

112 —— [Review of "Ice work, present and past," by T. G. Bonney.]

Science, new ser., vol. iv, pp. 406–408, 1896.

113 **Chambers** (R. E.). A Newfoundland iron deposit.

Can. Mining Review, vol. xv, pp. 69–72, 1896.

Describes briefly the geology of the region and the character of the ore bodies.

114 **Chaney** (L. W., jr.). Glaciers in the Montana Rockies.

Science, new ser., vol. iv, pp. 761–762, 1896.

Describes existing glaciers in northern Montana.

115 **Chapman** (Frederick). On some Pliocene Ostracoda from near Berkeley [California].

Univ. of Cal., Dept. of Geol., Bull., vol. ii, pp. 93–100, pl. 3, 1896.

Gives a description of the Ostracod-bearing beds, and describes and figures a number of new species.

116 **Chase** (Harvey S.). Southern magnetites and magnetic separation.

Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 551–557, 1896.

Describes the methods of treating nontitaniferous iron ores, and gives a table of chemical analyses of representative magnetic ores from North Carolina and Tennessee.

117 **Chester** (Albert H.). On caswellite, an altered biotite from Franklin Furnace, N. J.

N. J. Geol. Surv., Ann. Rept. for 1895, pp. xxxvii–xl, 1896.

Describes the occurrence and microscopic and chemical characters of the mineral.

118 **Clark** (William Bullock). The Eocene deposits of the Middle Atlantic slope in Delaware, Maryland, and Virginia.

U. S. Geol. Surv., Bull. No. 141, 167 pp., 40 pls., 1896.

Describes the general relations, distribution, character and stratigraphic and paleontologic characteristics of the Eocene strata of the region. Presents a bibliography, discusses the criteria to be employed in the correlation of the deposits, and describes a large number of species.

119 —— The Potomac River section of the Middle Atlantic Coast Eocene.

Am. Jour. Sci., 4th ser., vol. i, pp. 365–374, 1896.

Gives a columnar section and describes the lithologic character and fauna of the several beds of the Potomac River section, including a list of the fossils characteristic of the two faunal stages. Discusses the geologic and paleontologic criteria for the correlation of the deposits.

120 —— Descriptions of the geological excursions made during the spring of 1895.

Johns Hopkins Univ. Circ., vol. xv, pp. 1–3, 1895.

Describes the Cretaceous and Tertiary formations along the Potomac River, the Cambrian and Silurian limestones of the Great Valley of Virginia, and the Upper Silurian sandstone of Massanutten Mountain.

121 —— Two new brachiopods from the Cretaceous of New Jersey

Johns Hopkins Univ., Circ., vol. xv, p. 3 (½ p.), 1895.

Describes two new species.

122 —— Contributions to the Eocene fauna of the Middle Atlantic slope.

Johns Hopkins Univ., Circ., vol. xv, pp. 3–6, 1895.

Discusses the geologic and paleontologic criteria for the correlation of the Eocene deposits and describes many species, including a number of new ones.

123 —— Additional observations upon the Miocene (Chesapeake) deposits of New Jersey.

Johns Hopkins Univ., Circ., vol. xv, pp. 6–8, 1895.

Describes the occurrence, relations, and lithologic character of the beds and discusses the correlation of the strata and the deformation of the region.

124 —— [Review of "Mollusca and Crustacea of the Miocene formation of New Jersey," by R. P. Whitfield.]

Science, new ser., vol. iii, pp. 291–292, 1896.

125 **Clarke** (John M.). The structure of certain Paleozoic barnacles.

Am. Geol., vol. xvii, pp. 137–143, pl. vii, 1896.

Discusses some of the characters of the species of Lepidocoleus and describes two new species.

126 **Claypole** (E. W.). The timepiece of geology.
Am. Geol., vol. xvii, pp. 40-45, 1896.
Discusses the relations of paleontologic and stratigraphic evidence in geologic science.

127 —— A new Titanichthys.
Am. Geol., vol. xvii, pp. 166-169, pl. x, 1896.
Describes and figures Titanichthys brevis n. sp.

128 —— The ancestry of the Upper Devonian placoderms of Ohio.
Am. Geol., vol. xvii, pp. 349-360, 1896.
Gives a list of the genera and a number of species of placoderms occurring in the Cleveland (Devonian) shale of Ohio and compares them with European fish faunas and gives their vertical distribution.

129 —— Dinichthys prentis-clarki.
Am. Geol., vol. xviii, pp. 199-201, pl. vii, 1896.
Describes this species.

130 **Clements** (J. Morgan). Notes on the microscopical character of certain rocks from northeast Alabama.
Ala. Geol. Surv., Bull. No. 5, pp. 133-176, 1896.
Describes the petrographic characters of the rocks collected.

131 **Codington** (E. W.). The Florida pebble phosphates.
Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 423-431, 1896.
Gives a brief discussion of the origin of the pebble phosphate and a description of the methods of mining.

132 **Coldwell** (A. E.). Notes on the superficial geology of Kings County, N. S.
N. S. Inst. Sci., Proc. and Trans., 2d ser., vol. ii, pp. 171-174, 1896.
Describes the distribution of the Triassic trap, Cambrian and Glacial deposits.

133 **Coleman** (A. P.). Anorthosites of the Rainy Lake region [Ontario].
Jour. of Geol., vol. iv, pp. 907-911, 1896.
Describes their geographic distribution in the region and their petrographic and chemical characters.

134 **Cooper** (W. F.). The Paleozoic formation.
Denison Univ., Sci. Lab., Bull., vol. ix, pp. 1-10, 1895.
Describes the general characters and distribution of the Paleozoic rocks.

135 **Cope** (E. D.). Sixth contribution to the knowledge of the marine Miocene fauna of North America.
Am. Phil. Soc., Proc., vol. xxxv, pp. 139-146, pls. xi-xii, 1896.
Describes several new species.

136 —— New and little known Mammalia from the Port Kennedy bone deposit [Pennsylvania].
Phil. Acad. Nat. Sci., Proc., 1896, pp. 378-394, 1896.
Describes material from the locality named, including several new species of mammals.

137 **Cope** (E. D.). Permian land Vertebrata with carapaces.
Am. Nat., vol. xxx, pp. 936–937, pls. xxi–xxii, 1896.
Includes brief remarks on the characters of the fossils and illustrations of two of the species.

138 **Cox** (E. T.). Geological sketch of Florida.
Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 28–36, 1896.
Reviews the literature on the geology of Florida and describes the character and distribution of the Eocene and overlying deposits.

139 —— The Albion phosphate district [Florida].
Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 36–40, 1896.
Gives a brief description of the phosphate deposits and the methods of mining.

140 **Cragin** (F. W.). The Plains Permian.
Am. Geol., vol. xviii, pp. 131–132 (½ p.) (correspondence), 1896.
Note on the use of the term Marion in the classification of the Permian.

141 —— The Choctaw and Grayson terranes of the Arietna.
Colo. College Studies, 5th Ann. Pub., pp. 40–48, 1894.
Reviews the nomenclature of the formations, describes the lithologic characters and fauna of the Choctaw limestone and Grayson marl in Texas, and discusses the relations of the fauna.

142 —— Descriptions of the invertebrate fossils from the Comanche series in Texas, Kansas, and Indian Territory.
Colo. College Studies, 5th Ann. Pub., pp. 49–68, 1894.
Describes a number of new species from the Cretaceous of northern Texas.

143 —— Vertebrate fossils from the Neocomian of Kansas.
Colo. College Studies, 5th Ann. Pub., pp. 69–73, pls. 1–2, 1894.
Describes five new species from the Cretaceous beds of Kansas.

143*a* —— The Permian system in Kansas.
Colo. College Studies, vol. vi, pp. 1–48, 1896.
Gives the author's classification of the Permian rocks of Kansas. Describes the character and distribution of the several subdivisions and gives lists of fossils from different horizons.

143*b* —— On the stratigraphy of the Platte series, or Upper Cretaceous of the Plains.
Colo. College Studies, vol. vi, pp. 49–52, 1896.
Gives brief notes on the subdivisions of the Platte series.

143*c* —— Preliminary notice of three late Neocene terranes of Kansas.
Colo. College Studies, vol. vi, pp. 53–54, 1896.
Describes briefly the characters of the three terranes in southwestern Kansas.

144 **Crane** (W. R.). "Horsebacks" in the Kansas Coal Measures.
Kans. Univ. Quart., vol. iv, pp. 145–151, 5 figs., 1896.
Describes the occurrences, character, and extent of the "horsebacks" and discusses their origin.

145 **Crawford** (J. J.). Thirteenth Annual Report of the State Mineralogist for the two years ending September 15, 1896 [California]. Sacramento, Cal., 1896, 726 pp.

Contains notes on mines of the several counties of the State, yielding antimony, lead, asphalt, borax, chromic iron, coal, copper, gold, gypsum, iron, magnesite, manganese, mineral springs, natural gas, petroleum, quicksilver, silver, structural materials, and miscellaneous products.

146 **Crosby** (William O.). Englacial drift.

Am. Geol., vol. xvii, pp. 203-234, 1896.

Discusses the early history of the Pleistocene ice sheet, the basal relations of a sedentary ice sheet, the relations of englacial drift to modified drift, and the evidences of transportation. Compares the Pleistocene ice sheet with modern glaciers.

147 —— Englacial drift.

Tech. Quart., vol. ix, pp. 116-144, 1896.

148 —— Mr. Bouve's [Thomas Tracy Bouvé] work in geology and mineralogy.

Boston Soc. Nat. Hist., Proc., vol. xxvii, pp. 236-239, 1896.

149 **Cross** (Whitman). Geology of Silver Cliff and the Rosita Hills, Colorado.

U. S. Geol. Surv., 17th Ann. Rept., Part II, pp. 269-403, pls. xxv-xxxvi, 1896.

Describes the geology and geologic relationships of the regions and the petrographic characters, occurrence and distribution of the gneiss, granite, dike rocks, and volcanic series. Presents a geologic map of the region. See Emmons (S. F.) No. 200.

150 —— Geology of the Cripple Creek gold mining district, Colorado.

Read before the Colorado Scientific Society, in Denver, Colo., June 4, 1894, 18 pp.

Describes the general geology of the region and the occurrence and characters of the volcanic rocks. Discusses the relationships of the mineral deposits to the rock masses.

151 —— Igneous rocks of the Telluride district, Colorado.

Read before the Colorado Scientific Society, in Denver, Colo., Sept. 7, 1896, 10 pp.

Describes the general character and distribution of the igneous rocks and the occurrence of diorite stocks and of intrusive rocks in the Cretaceous shales. Includes description of the volcanic series of the western San Juan district.

152 —— The San Miguel formation [Colorado].

Read before the Colorado Scientific Society, in Denver, Colo., Sept. 7, 1896, 7 pp.

Describes the character, relationships, and distribution of the formation, and discusses its Eocene or Upper Cretaceous age.

153 —— **Emmons** (S. F.), and **Eldridge** (G. H.). Geology of the Denver Basin in Colorado.

See Emmons (S. F.), Cross (W.), and Eldridge (G. H.). No. 202.

154 **Cushing** (Henry P.). Notes on the areal geology of Glacier Bay, Alaska.

N. Y. Acad. Sci., Trans., vol. xv, pp. 24–34, pl. i, 1896.

Describes the character and distribution of the limestone and igneous rocks, compares them with other Alaskan sections, and gives petrographic notes on the quartz diorites and schists.

155 —— On the existence of pre-Cambrian and post-Ordovician trap dikes in the Adirondacks.

N. Y. Acad. Sci., Trans., vol. xv, pp. 248–252, 1896.

Discusses the rock classification and describes the character and distribution of the dikes.

D.

156 **Dale** (T. Nelson). Structural details in the Green Mountain region and in eastern New York.

U. S. Geol. Surv., 16th Ann. Rept., Pt. I, pp. 549–570, figs. 70–100, 1896.

Describes the structural features of the region and gives a bibliographic list of the author's descriptions of related phenomena in publications of the U. S. Geological Survey.

157 **Dall** (William H.). Report on coal and lignite of Alaska.

U. S. Geol. Surv., 17th Ann. Rept., Pt. I, pp. 771–875, pls. xlviii-lviii, figs. 23-25, 1896.

Describes the local occurrences of coal, the general Tertiary geology of Alaska, and includes notes on the occurrences of Silurian, Devonian, Carboniferous, and Mesozoic rocks.

158 —— Diagnoses of new Tertiary fossils from the southern United States.

U. S. Nat. Mus., Proc., vol. xviii, pp. 21–46, 1896.

Describes a large number of new species.

159 **Darton** (Nelson Horatio). Preliminary report on artesian waters of a portion of the Dakotas.

U. S. Geol. Surv., 17th Ann. Rept., Pt. II, 89, pp. pls. lxix–cvii, figs. 50–65, 1896.

Describes the extent, occurrence, composition, and origin of artesian waters of the several counties of the region.

160 —— Catalogue and index of contributions to North American geology, 1732–1891.

U. S. Geol. Surv., Bull. No. 127, 1045 pp., 1896.

Contains an author's list of titles of papers arranged chronologically under each author and a subject index.

161 —— Artesian well prospects in the Atlantic Coastal Plain region.

U. S. Geol. Surv., Bull. No. 138, 228 pp., 19 pls., 1896.

Gives the results of investigations of artesian well prospects in portions of the Middle and South Atlantic States, including records of well borings, and notes on the general geology of the region and on the Cretaceous and Tertiary deposits.

162 **Darton** (Nelson Horatio). Nomini folio, Maryland and Virginia.

U. S. Geol. Surv., Geol. Atlas of U. S., folio No. 23, 1896.

Describes the physiography, lithologic character and succession of the Pleistocene and Tertiary formations, the geologic history of the Coastal Plain, and the occurrence of marl and clay. Includes topographic, geologic, and artesian well maps.

163 —— Franklin folio, Virginia and West Virginia.

U. S. Geol. Surv., Geol. Atlas of U. S., folio No. 32, 1896.

Describes the geographic and stratigraphic features of the region, the character and distribution of the Silurian, Devonian, and Carboniferous rocks, the geologic structure, and the occurrence of iron, and the characters of the soils.

164 —— Examples of stream robbing in the Catskill Mountains [New York].

Abstract: Geol. Soc. Am., Bull., vol. vii, pp. 505–507, pl. 23, fig. 1, 1896.

Describes the phenomena and gives a map and cross section of the region.

165 —— Notes on relations of lower members of the Coastal Plain series in South Carolina.

Geol. Soc. Am., Bull., vol. vii, pp. 512–518, fig. 2, 1896.

Describes the occurrence of the Potomac formation overlying the crystalline rocks and mentions the character and thickness of the other formations of the Coastal Plain series in this region.

166 —— and **Taff** (Joseph A.). Piedmont folio, West Virginia and Maryland.

U. S. Geol. Surv., Geol. Atlas of U. S., folio No. 28, 1896.

Describes the physiographic and drainage features, the character and distribution of Silurian, Devonian, and Carboniferous rocks, the geologic structure and the occurrence of coal, iron, and building stones. Includes topographic, geologic and structure section maps and a sheet of columnar sections.

167 **Davidson** (A. D.), **Weller** (S.) and. Petalocrinus mirabilis n. sp., and a new American fauna.

See Weller (S.) and Davidson (A. D.), No. 735.

168 **Davis** (William Morris). The quarries in the lava beds at Meriden, Conn.

Am. Jour. Sci., 4th ser., vol. i, pp. 1–13, figs. 1–3, 1896.

Describes the several beds of the quarries and discusses the evidences of the tilting and faulting that has taken place.

169 —— Bearing of physiography on uniformitarianism.

Abstract: Geol. Soc. Am., Bull., vol. vii, pp. 8–11, 1896.

Discusses the origin and development of land forms in their bearing on the principles of uniformitarianism.

170 —— Plains of marine and subaerial denudation.

Geol. Soc. Am., Bull., vol. vii, pp. 377–398, 1896.

Refers to the English and American authorities as to the origin of broad plains of denudation. Reviews the arguments and discusses the results of marine and of subaerial denudation.

171 **Davis** (William Morris). The outline of Cape Cod [Massachusetts].

Am. Acad. Arts and Sci., Proc., vol. xxxi, pp. 303–332, 1896.

Reviews previous descriptions of Cape Cod and discusses its origin and development.

172 **Davison** (John M.). Wardite; a new hydrous basic phosphate of alumina.

Am. Jour. Sci., 4th ser., vol. ii, pp. 154–155, 1896.

Describes the chemical and physical characters of an encrustation on decomposed massive variscite.

173 **Dawson** (George M.). Summary report on the operations of the Geological Survey for the year 1894 [Canada].

Canada Geol. Surv., new ser., vol. vii, Rept. A, 123 pp., 1896.

Gives a brief description of the field work in 1894 on the Tar sands of Athabasca, the cinnabar and gold ore deposits of British Columbia, reconnoissance surveys in the Northwest Territory, the Archean rocks of Ontario, the Ordovician rocks of Quebec and adjacent regions, reconnoisance surveys in the Northeast Territory, the Pleistocene and Glacial phenomena of New Brunswick, and the Triassic, Carboniferous, Devonian, and Silurian rocks of Nova Scotia.

174 —— Report on the area of the Kamloops map-sheet, British Columbia.

Canada Geol. Surv., new ser., vol. vii, Rept. B, 427 pp., 7 pls., 1896.

Describes the physiography of the region and presents a table showing the nomenclature, lithologic character, and thickness of the Cambrian, Carboniferous, Juratrias, Cretaceous, and Tertiary formation, and a comparative table of formations of the eastern border of the Rocky Mountains, in Selkirk range, and on the western side of the Rockies. Describes the distribution and relations of each of these formations. Gives an account of the glacial phenomena and of the occurrence of gold, cinnabar, iron, copper, coal, and building stones.

175 —— (with the collaboration of R. G. McConnell.) Glacial deposits of southwestern Alberta in the vicinity of the Rocky Mountains.

Geol. Soc. Am., Bull., vol. vii, pp. 31–66, pl. i, figs. 1–5, 1896.

Describes the physiography of the region and gives a summary of previous observations and sections on Belly and Oldman rivers. Describes the distribution of material derived from the Rocky Mountain and Laurentian glaciers. Includes a summary and discussion of results.

176 **Dawson** (J. William). On collections of Tertiary plants from the vicinity of the city of Vancouver, B. C.

Canada Roy. Soc., Proc. and Trans., 2d ser., vol. i, sect. iv, pp. 137–151, pls. iv–viii, 1896.

Discusses the relations of the Tertiary beds of the region, with notes on the fossil plants.

177 **Dawson** (J. William). Notes on the bivalve shells of the Coal formation of Nova Scotia.

Can. Rec. Sci., vol. vi, pp. 117-134 and 167, figs. 1-13, 1894.

Discusses the characters of the genus Naiadites and describes fossil shells from the Carboniferous strata of Nova Scotia, including new species.

178 —— Notes on a specimen of Beluga catodon from the Leda clay, Montreal.

Can. Rec. Sci., vol. vi, pp. 351-354, 1895.

Describes the occurrence in Pleistocene rocks.

179 —— Review of the evidence for the animal nature of Eozoon canadense.

Can. Rec. Sci., vol. vi, pp. 470-479, vol. vii, pp. 62-77, figs. 6-8, 1896.

Reviews the literature and discusses the petrologic, chemical, and biologic evidences of the animal nature of Eozoon canadense.

180 —— Pre-Cambrian fossils.

Can. Rec. Sci., vol. vii, pp. 157-162; Brit. Assoc. Adv. Sci., Rept. 1896, pp. 784-785; Abstract: Geol. Mag., dec. 4, vol. iii, pp. 513-514, 1896.

Remarks on occurrence of fossils in pre-Cambrian rocks of North America.

181 **Dean** (Bashford). On the vertebral column, fins, and ventral armor of Dinichthys.

N. Y. Acad. Sci., Trans., vol. xv, pp. 157-163, pls. vii-viii, 1896.

182 **De Kalb** (Courtenay). Onyx marbles.

Am. Inst. Mg. Engrs. Trans., vol. xxv, pp. 557-569, 1896.

Describes the commercial varieties of onyx marbles and their occurrence in different parts of the United States, Mexico, and other countries.

183 **Diller** (Joseph Silas). A geological reconnoissance in northwestern Oregon.

U. S. Geol. Surv., 17th Ann. Rept., Pt. I, pp. 447-520, pls. iv-xvi, figs. 4-17, 1896.

Describes the physiographic features and the character and distribution of the Cretaceous, Tertiary, and Pleistocene deposits of the region and the occurrence and character of the coal veins, iron ores, building stones, and gold.

184 **Dowling** (D. B.). Report on the country in the vicinity of Red Lake, and part of the basin of Berens River, Keewatin.

Canada Geol. Surv., new ser., vol. vii, Rept. F, 54 pp., 1896.

Describes the physiography of the region, the character and distribution of the Archean rocks and of the glacial phenomena.

185 **Dresser** (John A.). Petrographical notes on some Archean rocks from Chelsea, Quebec.

Ottawa Nat. vol. x, pp. 129-133, 1896.

Describes serpentine limestone, gneiss, and olivine diabase.

E.

186 **Earle** (Charles). Tapirs, past and present.
Science, new ser., vol. iv, pp. 934-935, 1896.
Discusses the relations of recent and fossil tapirs.

187 **Eastman** (Charles R.). Remarks on Petalodus alleghaniensis Leidy.
Jour. of Geol., vol. iv, pp. 174-176, 1896.
Reviews descriptions of P. securiger by O. P. Hay, with remarks on the retention of the name Petalodus alleghaniensis for P. securiger, P. destructor, and P. alleghaniensis, all of which the author considers identical.

188 —— Preliminary note on the relations of certain body-plates in the Dinichthyids.
Am. Jour. Sci., 4th ser., vol. ii, pp. 46-50, 1896.
Describes the character and relationships of new material from the Cleveland shale of Ohio.

189 **Edwards** (Arthur M.). On the occurrence of Neocene marine Diatomaceæ near New York.
Am. Nat., vol. xxx, pp. 212-216, 1896.
Describes the occurrence of strata containing Diatomaceæ on Long Island, N. Y. Gives a list of the forms.

190 **Eldridge** (George H.). The uintaite (gilsonite) deposits of Utah.
U. S. Geol. Surv., 17th Ann. Rept., Part I, pp. 909-949, pls. lix-lx, figs. 26-33, 1896.
Describes the classification and chemical relations of hydrocarbons, the geology of the region, and the occurrence and character of the veins. Presents a geologic map of the country.

191 —— Occurrence of uintaite in Utah.
Science, new ser., vol. iii, pp. 830-832, 1896.
Describes the veins of uintaite, cutting Tertiary strata in Utah, and gives its chemical analysis.

192 —— **Emmons** (S. F.), **Cross** (W.), and. Geology of the Denver Basin in Colorado.
See Emmons (S. F.), Cross (W.), and Eldridge (G. H.), No. 202.

193 **Ells** (R. W.). Report on a portion of the Province of Quebec comprised in the southwest sheet of the "Eastern Townships" map (Montreal sheet) [Canada].
Canada Geol. Surv., new ser., vol. vii, Rept. J, 157 pp., 1896.
Describes the character and distribution of the Devonian, Silurian, Cambro-Silurian, Cambrian, pre-Cambrian, and the volcanic and plutonic rocks of the region. Gives a brief account of the economic minerals.

194 —— The apatite-bearing rocks of the Ottawa district [Canada].
Can. Rec. Sci., vol. vi, pp. 213-222, 1895.
Describes the general features of Laurentian rocks, and the character, occurrence, and origin of the apatite deposits.

195 **Ells** (R. W.) The geology of the Ottawa and Parry Sound railway [Ontario].

Ottawa Nat., vol. x, pp. 165–173, 1896.

Describes the local geology along the route. The rocks are mainly Silurian.

196 —— and **Barlow** (A. E.). The physical features and geology of the route of the proposed Ottawa canal between the St. Lawrence River and Lake Huron.

Canada Roy. Soc., Proc. and Trans., 2d ser., vol. i, sect. iv, pp. 163–190, with geologic map, 1896.

Describes the drainage and physical features, and reviews the work of various geologists in this region.

197 **Elmore** (C. J.). Fossil Diatomaceæ from Nebraska and their relations to modern species.

Torrey Bot. Club., Bull., vol. xxiii, pp. 269–275, 1896.

Describes the general features of the deposits, discusses the relation of the diatoms to modern species and gives a list of the species determined.

198 —— See **Barbour** (E. H.), No. 34.

199 **Emerson** (B. K.). Geology of Old Hampshire County, in Massachusetts.

Abstract. Geol. Soc. Am., Bull., vol. vii, pp. 5–6, 1896.

Describes briefly the character and distribution of the pre-Cambrian, Triassic, and Quaternary rocks.

200 **Emmons** (Samuel Franklin). The mines of Custer County, Colorado.

U. S. Geol. Surv., 17th Ann. Rept. Part II, pp. 411–472, pl. xxxvii, figs. 38–43, 1896.

Describes the character and mode of occurrence of the gold and silver-bearing ores and discusses their origin. Includes analyses of sinters and waters from 500 and 2,000 feet levels of the Geyser Mine. See Cross (W.) No. 149.

201 —— Some mines of Rosita and Silver Cliff, Colorado.

Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. 773–823, 1896.

Describes the geologic history of the region, and the occurrence and character of the ore bodies in the principal mines. Discusses their origin. Gives chemical analyses of waters from deep levels in the Geyser mine and a discussion of the results.

202 —— **Cross** (Whitman), and **Eldridge** (George H.). Geology of the Denver Basin in Colorado.

U. S. Geol. Surv., Mon. xxvii, 556 pp., 31 pls., 102 figs., 1896.

Chapter I is a description of the physiography, and historical and structural geology of the region. Chapter II describes the lithologic characters, distribution, and structure of the Jurassic and Cretaceous subdivisions. Chapter III comprises an account of the stratigraphy and age of the Arapahoe, Denver, and Monument Creek formations. Chapter IV describes the character and distribution of the Pleistocene deposits. Chapter V is a description of the geological occurrence and petrographic characters of the igneous rocks. Chapter VI describes the occurrence of coal and clay and the artesian wells of the region. Includes topographic, geologic, structure section maps and columnar sections in pocket.

203 **Endlich** (F. M.). Mining in the Mojave Desert in California.
Eng. and Mg. Jour., vol. lxii, pp. 197–198, 1896.
Describes the gold mines of Kern County, California.

204 **Everman** (John). The genus Temnocyon and a new species thereof and the new genus Hypotemnodon from the John Day Miocene of Oregon.
Am. Geol., vol. xvii, pp. 267–287, pl. xi, 1896.
Describes Temnocyon ferox and Hypotemnodon coryphæus n. sp., from the Miocene beds of Oregon.

F.

205 **Fairbanks** (Harold W.). Ore deposits with special reference to the Mother Lode [California].
Cal. State Mining Bureau, 13th Ann. Rept., pp. 665–672, 1896.
Discusses the meaning of the term Mother Lode and describes the general features of the ore bodies occurring in this region.

206 —— The geology of Point Sal [California].
Univ. of Cal., Dept. of Geol., Bull., vol. ii, pp. 1–92, pls. 1–2, 1896.
Describes the characters of the Miocene and Knoxville beds, the petrographic characters of augite-teschenite, basalt, gabbro, peridotite, and serpentine, and discusses the age of these eruptions.

207 —— Notes on the geology of eastern California.
Am. Geol., vol. xvii, pp. 63–74, pl. iii, 1896.
Describes the topography of the portion of California east of the Sierra Nevada range and the character and distribution of the metamorphic, sedimentary, and igneous rocks.

208 —— The mineral deposits of eastern California.
Am. Geol., vol. xvii, pp. 144–158.
Describes the distribution and geologic relations of the gold and silver ores and the pyritiferous mineralization of the rocks. Discusses the origin of the gold and silver ore bodies.

209 —— The age of the California Coast ranges.
Am. Geol., vol. xviii, pp. 271–282, 1896.
Reviews the opinions of various writers as to the evolution of the Coast ranges and discusses the changes that have affected them during Jurassic, Cretaceous, and Tertiary times.

210 —— Stratigraphy at Slate's Springs, with some further notes on the relation of the Golden Gate series to the Knoxville.
Am. Geol., vol. xviii, pp. 350–356, 1896.
Discusses the evidence as to the Jurassic or Cretaceous age of the Golden Gate series and of its relations to the Knoxville beds.

211 —— The possibilities of the petroleum industry in California.
Eng. and Mg. Jour., vol. lxi, p. 588, 1896.
Describes the occurrence of petroleum in various parts of California.

212 —— The coal beds of California.
Eng. and Mg. Jour., vol. lxii, p. 10, 1896.
Describes the Tertiary coals of the Coast ranges.

213 **Fairbanks** (Harold W.). The great Mother Lode of California.
Eng. and Mg. Jour., vol. lxii, pp. 248–250, 1896.
Describes the characteristics of the gold-bearing veins of the region.

214 —— Note on a breathing gas well [California].
Science, new ser., vol. iii, pp. 693–694, 1896.
Describes the peculiar features of this well and the character of the associated Cretaceous and Jurassic strata.

215 —— The mineral deposits of eastern California.
Mining and Scientific Press, vol. lxxiii, pp. 480–481, 501, 1896.
Describes the occurrence of gold veins in this region.

216 **Fairchild** (Herman Le Roy). Glacial Genesee lakes.
Geol. Soc. Am., Bull., vol. vii, pp. 423–452, pls. 19–21, 1896.
Describes the hydrography, topography, and geologic history of the Genesee Valley. Gives a description of the history and outlets of the several glacial lakes and of contemporary local glacial lakes and subsequent morainal lakes.

217 —— Kame areas in western New York south of the Irondequoit and Sodus bays.
Jour. of Geol., vol. iv, pp. 129–159, figs. 1–7, 1896.
Describes the character and extent of massive deposits of sand and gravel of glacial origin. Compares these kame areas with the area at Rochester, N. Y., and discusses their manner of formation.

218 **Farr** (Marcus S.). Notes on the osteology of the White River horses.
Am. Phil. Soc., Proc., vol. xxxv, pp. 147–175, pl. xiii, figs. 1–6, 1896.
Discusses the osteology of Mesohippus and gives a bibliography of the literature.

219 **Farrington** (Oliver C.). Phenomena of falling meteorites.
Am. Geol., vol. xvii, pp. 82–89, 1896.
Reviews the history of the phenomena of falling meteorites.

220 —— [Review of "Expedition cientifica al Popocatapetl," by José G. Aguilera and Ezequiel Ordonez.]
Jour. of Geol., vol. iv, pp. 516–520, 1896.

221 **Ferrier** (W. F.). Petrographical characters of some rocks from the area of the Kamloops map sheet, British Columbia.
Canada Geol. Surv., new ser., vol. vii, Rept. B, appendix 1, pp. 349B–400B, 1896.
Describes the petrographic characters of schist, porphyrites, amphibolites, tuff, gabbro, dacite, trachyte, andesite, basalt, diorite, granite, syenite, and quartz porphyry.

222 —— Erythrite, stilpnomelane var. chalcodite, crystallized monazite, and pleochroic apatite from some Canadian localities.
Ottawa Nat., vol. ix, pp. 193–195, 1896.

223 **Finlay** (J. Ralph), **Smyth** (H. L.) and. The geological structure of the western part of the Vermillion range, Minnesota.
See Smyth (H. L.) and Finlay (J. R.), No. 640.

224 **Foerste** (Aug. F.). An account of the Middle Silurian rocks of Ohio and Indiana, including the Niagara and Ohio Clinton, and the bed at the top of the Lower Silurian strata, formerly considered the Medina.

Cin. Soc. Nat. Hist., Jour., vol. xviii, pp. 161-199, 1896.

Describes local details of the succession of Lower and Upper Silurian rocks at various places in southeastern Indiana and southwestern Ohio, and discusses the evidences as to correct separation of these two groups and the correlation of the several members.

225 **Fontaine** (William M.). The Potomac formation in Virginia.

U. S. Geol. Surv., Bull., No. 145, 149 pp. 2 pls., 1896.

Describes the character and occurrence of Potomac strata at various localities in Virginia and discusses the evidence as to the age of the formation.

226 —— Notes on some Mesozoic plants from near Oroville, California.

Am. Jour. Sci., 4th ser., vol. ii, pp. 273-275, 1896.

Gives a list of the plants collected and discusses their bearing on the evidence as to the age of the deposits, which is considered to be Jurassic.

227 **Foote** (H. W.). On the occurrence of pollucite, mangano-columbite, and microlite at Rumford, Maine.

Am. Jour. Sci., 4th ser., vol. i, pp. 457-461, 1896.

Gives a brief description of the occurrence of the minerals and the chemical composition of pollucite. Describes the crystallographic characters of mangano-columbite and microlite.

228 **Forbes** (E. H.). On the epidote from Huntington, Mass., and the optical properties of epidote.

Am. Jour. Sci., 4th ser., vol. i, pp. 26-30, 1896.

Gives the chemical analysis of the epidote and describes its crystallographic characters.

229 —— **Penfield** (S. L.) and. Fayalite from Rockport, Mass., and on the optical properties of the chrysolite-fayalite group and of monticellite.

See Penfield (S. L.) and Forbes (E. H.), No. 539.

230 **Fowke** (Gerard). Pre-Glacial and recent drainage channels in Ross County, Ohio.

Denison Univ., Sci. Lab., Bull., vol. ix, pp. 15-24, pl. i, 1895.

Discusses the origin of certain drainage features and gives a map of the region.

231 **Frazer** (Persifor). Two supposed new trap dikes in Chester County, Pennsylvania.

Phil. Acad. Nat. Sci., Proc., 1896, pp. 206-207, 1896.

Remarks on the occurrence of trap dikes in Chester County.

232 **Fuller** (Myron L.). A new occurrence of Carboniferous fossils in the Narragansett Basin.

Boston Soc. Nat. Hist., Proc., vol. xxvii, pp. 195-199, 1896.

Describes the lithologic character of the strata, with notes on the occurrence of Calamites and Sigillaria.

233 **Fultz** (Francis M.). Recent discoveries of glacial scorings in southeastern Iowa.

Iowa Acad. Sci., Proc., vol. iii, pp. 60–62, 1896.

Presents data showing that the Illinois ice lobe crossed the Mississippi into Iowa.

234 —— Some facts brought to light by deep wells in Des Moines County, Iowa.

Iowa Acad. Sci., Proc., vol. iii, pp. 62–63, 1896.

Gives brief notes on certain deep wells.

G.

235 **Gane** (Henry Stewart). A contribution to the Neocene corals of the United States.

Johns Hopkins Univ., Circ., vol. xv, pp. 8–10, 1895.

Describes the distribution of Neocene corals and the characters of a number of new species.

236 **Gesner** (G. W.). Dr. Abraham Gesner. A biographical sketch.

New Brunswick Nat. Hist. Soc., Bull. No. 14, pp. 3–11, 1896.

237 **Gilbert** (Grove Karl). The underground waters of the Arkansas Valley in eastern Colorado.

U. S. Geol. Surv., 17th Ann. Rept., Pt. II, 51 pp., pls. lvi–lxviii, figs. 45–49, 1896.

Describes the character, distribution, and structure of the Jurassic and Cretaceous strata, the sands and gravels, and the general conditions of the artesian and ground waters.

238 —— Laccolites in southeastern Colorado.

Jour. of Geol., vol. iv, pp. 816–825, 5 figs., 1896.

Describes the character of the laccolitic rocks, the structure of the region, and the lithologic character and distribution of the associated Dakota and Neocene beds.

239 —— The origin of hypotheses, illustrated by the discussion of a topographic problem.

Science, new ser., vol. iii, pp. 1–13, figs. 1–6; Washington Geol. Soc. Address of retiring President, in 1895, 1896.

Describes the nature and origin of hypotheses as indicated by a study of the Coon Butte region in Arizona.

240 —— [Review of "Elements of geology, a text-book for colleges and for the general reader," by Joseph Le Conte.]

Science, new ser., vol. iv, pp. 620–621, 1896.

241 —— Age of the Potomac formation.

Science, new ser., vol. iv, pp. 875–877, 1896.

Discusses methods of correlation employed by Prof. Marsh in his paper on the Jurassic formation of the Atlantic Coast.

242 **Gill** (Thomas). Note on the Devonian Palæospondylus.

Science, new ser., vol. iv, pp. 10–11, 1896.

Quotes Dr. Traquair's description of Palæospondylus gunni and discusses briefly their relations.

243 **Gilpin** (E.). The iron ores of Nictaux, N. S., and notes on steel making in Nova Scotia.

N. S. Inst. of Sci., Proc. and Trans., 2d ser., vol. ii, pp. 10–20, 1896.

Describes the character and extent of the iron ore bodies.

244 —— The undeveloped coal fields of Nova Scotia.

N. S. Inst. Sci., Proc. and Trans., 2d ser., vol. ii, pp. 134-149, 1896.

Describes the character of the Carboniferous strata and the occurrence of coal in parts of Nova Scotia.

245 **Girty** (George H.). Mr. Sardeson and fossil tabulates.

Am. Geol., vol. xviii, pp. 332–333, 1896.

246 **Glenn** (William). Chromic iron, with reference to its occurrence in Canada.

U. S. Geol. Surv., 17th Ann. Rept., pt. iii, pp. 261–273, 1896.

Gives a historical sketch of chromic iron and describes its occurrence in the United States and Canada.

247 —— Chrome in the southern Appalachian region.

Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 481–499, 1896.

Gives a historical account of chromium, describes the occurrence of chromic iron in Maryland and Pennsylvania, and discusses its origin and relations to the associated serpentine.

248 —— The form of fissure walls, as affected by subfissuring and by the flow of rocks.

Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 499–513, 1896.

Describes the form of certain fissures in the flow of rocks as shown by a section of the Appalachians in Maryland.

249 **Gordon** (Charles H.). A report on the Bevier sheet including portions of Macon, Randolph, and Chariton counties [Missouri].

Mo. Geol. Surv., vol. ix, Sheet Rept. No. 2, 75 pp., figs. 1–5, 1896.

Describes the physiographic character of the region, the lithologic characters of the Coal Measure and Quaternary beds, and the economic geology of the coal area.

250 —— Syenite-gneiss (leopard rock) from the apatite region of Ottawa County, Canada.

Geol. Soc. Am., Bull., vol. vii, pp. 95–134, figs. 1-9, 1896.

Describes the general geology of the region, the geologic occurrence of the syenite-gneiss and its megascopic and microscopic characters. Discusses the character, relations, nomenclature, and origin of the ellipsoidal structure of the rocks. Gives chemical analyses of the gneiss.

251 **Gould** (C. N.). A geologic section across the Flint Hills along the Missouri Pacific Railway, beginning near Cedarvale and extending to Winfield [Kansas].

Univ. Geol. Surv. of Kans., vol. i, pp. 31–34, fig. 1, 1896.

Gives a vertical section of the strata and descibes briefly the lithologic character and fauna of the exposures examined.

252 **Grant** (C. C.). Geological notes.

Hamilton Assoc., Jour. and Proc., No. 12, pp. 140–145, 1896.

Gives notes on the Upper Silurian fauna in the vicinity of Hamilton, Ontario.

253 **Grant** (C. C.). Additional notes regarding our local graptolites.

Hamilton Assoc., Jour. and Proc., No. 12, pp. 159-163, 1896.

Notes on localities in the vicinity of Hamilton, Ontario, where graptolites have been found.

254 **Grant** (U. S.), **Winchell** (N. H.) and. Volcanic ash from the north shore of Lake Superior.

See Winchell (N. H.) and Grant (U. S.), No. 766.

255 **Gratacap** (L. P.). Fossils and fossilization.

Am. Nat., vol. xxx, pp. 902-912, 993-1003, 1896.

Describes the characters, preservation, and distribution of fossils.

256 —— [Review of "A dictionary of the names of minerals, including their history and etymology," by A. H. Chester.]

Science, new ser., vol. iv, pp. 117-118, 1896.

257 **Greenleaf** (James L.). The hydrology of the Mississippi.

Am. Jour. Sci., 4th ser., vol. ii, pp. 29-46, 1896.

Describes the drainage area of the Mississippi and its tributaries, the distribution and amount of rainfall, and the temperature and character of the flow of the streams.

258 **Greenlee** (W. B.). The amount of water in the earth's crust.

Am. Geol., vol. xviii, pp. 33-35, 1896.

Describes the author's method of computing the amount of water in the earth's crust.

259 **Gresley** (W. S.). Traces of organic remains from Huronian (?) series at Iron Mountain, Mich., etc.

Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. 527-534, 1896.

Describes the characteristics of markings, considered to be of organic origin, from the ore bodies at this locality.

260 —— Observations regarding the occurrence of anthracite, with a new theory of its origin.

Am. Geol., vol. xviii, pp. 1-21, pl. i, 1896.

Discusses J. J. Stevenson's theory as to the origin of Pennsylvania anthracite and the origin of the metamorphism in this region. Describes the conditions in other coal fields.

261 —— A granite bowlder near Pittsburg, Pa.

Am. Geol., vol. xviii, pp. 331-332 (correspondence), 1896.

Gives reasons for supposing this to be an erratic belonging to the Glacial period.

262 **Griswold** (Leon S.). Notes on the geology of southern Florida.

Harv. Coll., Mus. Comp. Zool., Bull., vol. xxviii, No. 2, pp. 52-62, pls. xvii-xxvi, 1896.

Describes the character of the Everglades and the occurrence of oolitic limestone. Discusses the origin of the oolite.

263 **Guentherodt** (J. J.). Twin lakes region [Colorado].

Colliery Eng., vol. xvii, pp. 201-202, 1896.

Describes the occurrence of gold placers and veins near Leadville, Colo.

264 **Gulliver** (F. P.). Cuspate forelands.

Geol. Soc. Am., Bull., vol. vii, pp. 399–422, pl. 18, figs, 1–15, 1896.

Describes the formation and method of growth of current, tidal, and delta cusps at typical localities on the Atlantic and Pacific coasts of the United States.

265 **Gurley** (**R.** R.). North American graptolites, new species and vertical range.

Jour. of Geol., vol. iv, pp. 63–102 and 291–311, pls. iv–v, 1896.

Mentions described species reported from American strata, giving their generic reference and geologic range. The paper also includes descriptions of new species, a list of American graptolites, and tables showing their vertical and geographic range.

266 **Gurley** (William F. E.), **Miller** (S. A.) and. Descriptions of new and remarkable fossils from the Paleozoic rocks of the Mississippi Valley.

See Miller (S. A.) and Gurley (W. F. E.), No. 508.

267 —— New species of crinoids from Illinois and other States.

See Miller (S. A.) and Gurley (W. F. E.), No. 509.

268 —— New species of Echinodermata and a new crustacean from the Paleozoic rocks.

See Miller (S. A.) and Gurley (W. F. E.), No. 510.

269 —— New species of Paleozoic invertebrates from Illinois and other States.

See Miller (S. A.) and Gurley (W. F. E.), No. 511.

270 **Gwillim** (J. C.). Gold and silver ores of the Slocan, B. C.

Can. Rec. Sci., vol. vi, pp. 494–498, 1896.

Describes gold and silver ore deposits in British Columbia.

H.

271 **Hague** (Arnold). Yellowstone National Park folio, Wyoming. General description.

U. S. Geol. Surv., Geol. Atlas of U. S., folio No. 30, figs. 1–11, 1896.

Describe the physiography and general geologic features and history of the region. Includes topographic and gelogic maps.

272 —— The age of the igneous rocks of the Yellowstone National Park.

Am. Jour. Sci., 4th ser., vol. i, pp. 445–457, 1896.

Reviews the geologic history of the Park, mentions the fossil plant and invertebrate remains found in the Tertiary strata, and discusses the bearing of the data on the age of the igneous rocks and the character of the post-Laramie movement.

273 **Hall** (John G.). A geologic section from State Line, opposite Boicourt, to Alma, principally along the Osage River [Kansas].

Univ. Geol. Surv. of Kans., vol. i, pp. 99–106, pl. v, 1896.

Describes the limestones and shales which comprise the Carboniferous formation in the region.

274 **Halse** (Edward). The quicksilver mine and reduction works at Huitzuco, Guerrero, Mexico.

North of Eng. Inst. of Mg. and Mech. Engrs., Trans., vol. xlv, pt. 1, pp. 72–88, 1895.

Describes the geologic features of the region, the character and occurrence of the ore and discusses its origin.

274*a* **Harper** (G. W.) and **Bassler** (R. S.). Catalogue of the fossils of the Trenton and Cincinnati periods occurring in the vicinity of Cincinnati, Ohio.

Cincinnati, Ohio, 34 pp., 1896.

275 **Harrington** (B. J.). The chemical composition of andradite from two localities in Ontario.

Can. Rec. Sci., vol. vi, pp. 479–481, 1896.

Gives chemical analyses of the material.

276 —— **Adams** (Frank D.) and. On a new alkali hornblende and a titaniferous andradite from the nepheline-syenite of Dungannon, Hastings County, Ontario.

See Adams (F. D.) and Harrington (B. J.), No. 5.

277 **Harris** (Gilbert D.). Claiborne fossils.

Am. Pal., Bull., vol. i, No. 1, pp. 1–50, pl. i, 1895.

Gives a list of Claiborne fossils and a description of three new species.

278 —— Neocene Mollusca, of Texas, or fossils from the deep well at Galveston.

Am. Pal., Bull., vol. i, No. 3, 25 pp. 4 pls., 1895.

279 —— The Midway stage.

Am. Pal., Bull., vol. i, No. 4, 125 pp., 15 pls., 1896.

Gives a historical sketch of the study of the Midway stage and describes sections in Texas, Arkansas, Tennessee, Mississippi, Alabama, and Georgia. Includes descriptions of molluscan remains of Midway stage.

280 —— New and interesting Eocene Mollusca from the Gulf States.

Phil. Acad. Nat. Sci., Proc., 1896, pp. 470–482, pls. xviii–xxiii, 1896.

The fossils described are from the Eocene of Alabama and Mississippi.

281 —— See **Say** (Thomas), No. 599.

282 **Hartzell** (J. C., jr.). The history and principles of geology and its aim.

Am. Nat., vol. xxx, pp. 177–183, 271–279, 1896.

Gives a historical sketch of the science of geology and discusses its principles and aims.

283 **Hatcher** (J. B.). Recent and fossil tapirs.

Am. Jour. Sci., 4th ser., vol. i, pp. 161-180, pls. ii–v, 1896.

Describes Protapirus validens n. sp., and discusses the osteology of the genus. Reviews the literature regarding the genera Colodon and Protapirus.

284 **Hatcher** (J. B.). Some localities for Laramie mammals and horned dinosaurs.

Am. Nat., vol. xxx, pp. 112-120, with map of a part of Wyoming, 1896.

Describes localities in Wyoming where these fossils have been found, with remarks on the occurrence and fauna of the Laramie and Ceratops beds.

285 **Haworth** (Erasmus). A geologic section from Coffeyville to Lawrence [Kansas].

Univ. Geol. Surv. of Kans., vol. i, pp. 129-139, pl. vii, 1896.

Describes the character of Carboniferous limestones and shales, and compares them with those of the Baxter Springs-Kansas City section.

286 —— Résumé of the stratigraphy and correlations of the Carboniferous formations.

Univ. Geol. Surv. of Kans., vol. i, pp. 145-194, pl. xxii, figs. 7-8, 1896.

Describes the characters of the different subdivisions of the Carboniferous and Permo-Carboniferous formations in Kansas and gives a list of their characteristic fossils and a table showing thickness, lithologic character, and characteristic fossils of the Upper Paleozoic rocks of central Kansas.

287 —— Physiographic features of the Carboniferous.

Univ. Geol. Surv. of Kans., vol. i, pp. 195-217, pls. xxiii-xxx, figs. 9-11, 1896.

Describes the characteristic erosion features of the Carboniferous and Permo-Carboniferous areas of Kansas.

288 —— The coal fields of Kansas (preliminary).

Univ. Geol. Surv. of Kans., vol. i, pp. 218-231, 1896.

Describes the geographic and geologic distribution of the coal beds in Kansas and gives a résumé of the stratigraphy of the Coal Measure strata.

289 —— Oil and gas in Kansas (preliminary).

Univ. Geol. Surv. of Kans., vol. i, pp. 232-245, 1896.

Gives a historical account of the industry, describes their geographic extent, and the character of the Coal Measure strata in which the oil and gas occur, and discusses their origin and physical and chemical properties.

290 —— Surface gravels of the Carboniferous area.

Univ. Geol. Surv. of Kans., vol. i, pp. 246-255, 1896.

Describes the character and distribution of the surface gravels and discusses their origin.

291 —— The Coal Measure soils (preliminary).

Univ. Geol. Surv. of Kans., vol. i, pp. 256-269, 1896.

Describes the general characters of the Coal Measure soils of Kansas and discusses methods of fertilization.

292 —— The University Geological Survey of Kansas, Vol. I.

Plates x-xxi are sections of deep wells in the Carboniferous area, plate xxii is a general vertical section of Carboniferous of Kansas and plate xxxi is a preliminary geologic map of Kansas.

293 **Haworth** (Erasmus). The crystalline rocks of Missouri.

Mo. Geol. Surv., vol. viii, pp. 84-220, pls. x-xxx, figs. 1-15, 1895.

Discusses the classification of the crystalline rocks and describes the chemical and mineralogic characters of the dike rocks, granites, granite porphyries, and porphyries.

294 —— Local deformation of strata in Meade County, Kans., and adjoining territory (preliminary).

Am. Jour. Sci., 4th ser., vol. ii, pp. 368-373, 1896. (with drainage map).

Discusses the geographic and geologic evidence of deformation of the region.

295 —— and **Bennett** (John). A geologic section from Baxter Springs [Kansas] to the Nebraska State line.

Univ. Geol. Surv. of Kans., vol. i, pp. 35-71, pl. ii, figs. 2-3, 1896.

Describes the lithologic character and succession, and mentions the fossils found in the various beds which make up the Carboniferous series in the region.

296 **Haworth** (Erasmus), **Nason** (F. L.), **Winslow** (A.) and. A report on the Iron Mountain sheet, including portions of Iron, St. Francois, and Madison counties [Missouri].

See Winslow (A.), Haworth (E.), and Nason (F. L.), No. 769.

297 **Hay** (Robert). The geology of the Fort Riley military reservation and vicinity, Kansas.

U. S. Geol. Surv., Bull. No. 137, 35 pp., 8 pls., 1896.

Describes the occurrence and gives a section of the Permian and Permo-Carboniferous beds and the physiography and hydrography of the region. Includes notes on the occurrence of Cretaceous, Tertiary, and Pleistocene beds, and on the Glacial phenomena.

298 —— On the eastern extension of the Cretaceous rocks in Kansas, and the formation of certain sandhills.

Kans. Acad. Sci., Trans., vol. xiv, pp. 227-229, 1896.

Describes the characteristics of the Dakota Cretaceous beds in the region and considers certain sandhills are formed of the weathered Dakota sandstone.

299 —— The river counties of Kansas. Some notes on their geology and mineral resources.

Kans. Acad. Sci., Trans., vol. xiv, pp. 230-260, 1896.

Describes the character and distribution of the Carboniferous formation in the counties of Kansas bordering on the Missouri River, the Glacial phenomena, and mineral resources. Gives the sections of several artesian wells.

300 —— A bibliography of Kansas geology, with some annotations.

Kans. Acad. Sci., Trans., vol. xiv, pp. 261-278, 1896.

301 **Hayes** (Charles Willard). Gadsden folio, Alabama.

U. S. Geol. Surv., Geol. Atlas of U. S., folio No. 35, 1896.

Describes the physiographic and stratigraphic features of the region, the occurrence, character, and distribution of the Cambrian, Silurian, Devonian, and Carboniferous rocks, the geologic structure and the occurrence of coal, iron, and soils. Includes topographic, geologic, structure section maps and columnar sections, and a list of formation names.

301*a* **Hayes** (Charles Willard). The Tennessee phosphates.

U. S. Geol. Surv., 17th Ann. Rept., Pt. II, 38 pp., pls. l–lv, fig. 44, 1896.

Describes the general physiographic and stratigraphic features of the region and the character and distribution of the black and white phosphates. Discusses their origin.

302 —— The white phosphates of Tennessee.

Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 19–28, 1896.

Describes the location, occurrence, and physical and chemical character of the phosphate deposits, and discusses their origin.

303 **Helmhacker** (R.) Sepiolite.

Eng. and Mg. Jour., vol. lxii, pp. 80–82, 1896.

Describes the characteristics of the mineral and its occurrence in different countries.

304 **Henrich** (Carl). The Ducktown ore deposits and the treatment of the Ducktown copper ores [Tennessee].

Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 173–245, figs. 1–22, 1896.

Gives a historical sketch of mining in this region, describes the geologic structure of the ore deposits and the physical and chemical characters of the copper ores, and discusses the genesis of the ore deposits. The paper contains a sketch map and cross sections of the ore deposits.

305 —— Faulting and accompanying features observed in glacial gravel and sand in southern Michigan.

Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. 460–464, fig. 1, 1896.

Describes the character of the strata and the faulting which has taken place in these Glacial deposits.

306 **Herbertson** (Andrew J.). The history of the Great Lakes and Niagara.

Sci. Amer. Suppl., vol. xlii, p. 17398, 1896.

Reviews the geologic history of the Great Lakes region.

307 **Herrick** (C. L.). The so-called socorro tripoli.

Am. Geol., vol. xviii, pp. 135–140, pls. iv–v, 1896.

Describes the occurrence in Newton County, Mo., gives a chemical analysis of the material and discusses its origin.

308 **Hershey** (Oscar H.). The Silveria formation (Illinois).

Am. Jour. Sci., 4th ser., vol. ii, pp. 324–330, 1896.

Describes the lithologic character, occurrence, and the fossil flora, gives a section of the formation and discusses the evidence of the age of the formation.

309 —— Ancient river deposits of the Spring River valley in Kansas.

Am. Geol., vol. xvii, pp. 37–40, 1896.

Describes the author's observations in southeastern Kansas and discusses the geologic history of the region.

310 —— Early Pleistocene deposits of northern Illinois.

Am. Geol., vol. xvii, pp. 287–303, 1896.

Describes Glacial deposits in the valley of Yellow Creek and discusses their evidence as to the early Pleistocene history of the region.

311 **Hershey** (Oscar H.). Pre-Glacial erosion cycles in northwestern Illinois.

Am. Geol., vol. xviii, pp. 72-100, 1896.

Describes the several peneplains of the region, correlates them with others in different parts of the United States and discusses the origin of drainage lines.

312 **Hilgard** (E. W.). The geologic efficacy of alkali carbonate solution.

Am. Jour. Sci., 4th ser., vol. ii, pp. 100-107, 1896.

Describes its occurrence and efficacy as a geologic agent.

313 **Hill** (Robert T.). Notes on the geology of Cuba.

Harv. Coll. Mus. Comp. Zool., Bull., vol. xvi, No. 15, pp. 243-288, 6 pls., 1895.

Describes the occurrence of pre-Tertiary metamorphic, igneous, and sedimentary rocks, the geologic history of the island as indicated by its topography, and the orogenic movements to which it has been subjected.

314 —— A question of classification.

Science, new ser., vol. iv, pp. 918-922, 1896.

Discusses the correlation of the so-called Jurassic of the Atlantic Coast with the Wealden of Europe, and of the relative importance of the evidence presented by Prof. Marsh, of the Jurassic age of the Potomac formation.

315 —— Fundamental geographic relations of the three Americas.

Nat. Geog. Mag., vol. vii, pp. 175-181, 1896.

Describes orographic features of the regions.

316 **Hill** (Walter Hovey). The Little Giant mine at Warren, Idaho.

Eng. and Mg. Jour., vol. lxii, p. 417 (½ p.), 1896.

Gives a brief description of the gold veins of this vicinity.

317 **Hillebrand** (W. F.). Remarkable phosphorescence of wollastonite.

Am. Jour. Sci., 4th ser., vol. i, p. 323 (communicated), 1896.

Brief note on the phosphorescence of wollastonite.

318 **Hills** (R. C.). Ore deposits of Camp Floyd district, Tooele County, Utah.

Read before the Colorado Scientific Society, in Denver, Colo., Aug. 6, 1894, 12 pp.

Describes the geologic features of the region and the mode of occurrence and character of the gold ores, and discusses their origin.

319 —— The Costilla meteorite [New Mexico].

Read before the Colorado Scientific Society, in Denver, Colo., Jan. 7, 1895, 2 pp., 1 pl.

Describes the characteristics of the meteorite and gives chemical analyses of the material.

320 —— [Geology of Cripple Creek district, Colorado.]

In discussion of paper by Whitman Cross on the same subject. See No. 150.

321 **Hitchcock** (C. H.). Champlain Glacial epoch.

Abstract: Geol. Soc. Am., Bull., vol. vii, pp. 2-4, 1896.

Correlates the divisions of the Ice Age by James Geikie with those of North America and describes the glacial phenomena of the Champlain epoch.

322 **Hitchcock** (C. H.). Paleozoic terranes in the Connecticut valley.

Abstract: Geol. Soc. Am., Bull., vol. vii, pp. 510–512, 1896.

Discusses the succession of the argillites, the characters of the hornblende schist and gneiss, and the correlation of certain beds.

323 —— The geology of New Hampshire.

Jour. of Geol., vol. iv, pp. 44–62, 1896.

Reviews the work of the geological surveys of New Hampshire and gives a list of their publications. Discusses the character of the formations, the geologic structure, and the general features of the Glacial geology of the State.

324 —— Gotham's cave; or fractured rocks in northern Vermont.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xliv, p. 133 (½ p.), 1896.

Describes openings or caves in a mica schist rock.

325 —— [Review of "Greenland ice fields and life in the North Atlantic, with a discussion of the causes of the ice age," by G. Frederick Wright and Warren Upham.]

Science, new ser., vol. iv, pp 598–600, 1896.

326 **Hobbs** (William H.). Chloritoid from Michigan—a correction.

Am. Jour. Sci., 4th ser., vol. ii, p. 87 (⅙ p.), (communicated), 1896.

Makes a correction of the crystallographic characters of the mineral described in a former paper.

327 **Hoffman** (G. Christian). Report of the section of chemistry and mineralogy [Canada Geol. Survey].

Canada Geol. Surv., new ser., vol. vii, Rept. R, 68 pp., 1896.

Gives chemical analyses of certain ores, minerals, and rocks.

328 **Hollick** (Arthur). [Contributions of John Strong Newberry to fossil botany.]

U. S. Geol. Surv., Mon. xxvi, pp. 15–20, 1896.

Gives a historical account of Prof. Newberry's work in paleobotany, and a list of his publications relating to fossil plants.

329 —— Geological notes, Long Island and Nantucket [New York and Massachusetts].

N. Y. Acad. Sci., Trans., vol. xv, pp. 3–10, 1896.

Describes the occurrence of marine Cretaceous and Yellow Gravel on Long Island and the character and fauna of post-Pliocene beds on Nantucket. Includes notes on glacial phenomena.

330 —— The geology of Block Island [Rhode Island].

Science, new ser., vol. iv, pp. 571–572, 1896.

Discusses Prof. Marsh's statement as to the Jurassic age of certain Block Island and Long Island strata.

331 —— New species of leguminous pods from the Yellow Gravel at Bridgeton, N. J.

Torrey Bot. Club, Bull., vol. xxiii, pp. 46–49, pls. 258–259, 1896.

Gives a list of the fossil leguminous pods of certain genera, discusses their relations to existing genera, and describes two new species.

332 **Hollick** (Arthur). Marthas Vineyard Cretaceous plants.

Abstract: Geol. Soc. Am. Bull., vol. vii, pp. 12–14, 1896.

Gives a list of the most prominently represented species and correlates the beds of the Amboy clays series. Remarks on the absence of lower Potomac strata.

333 —— Recent discovery of the occurrence of marine Cretaceous strata on Long Island.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xliv, pp. 133–135, 1896.

Describes recent observations of the author's on Long Island and discusses their bearing on the extension of the Cretaceous formation.

334 —— See **Newberry** (J. S.), No. 519.

335 **Holm** (Theo.). Remarks upon Paleohillia, a problematic fossil plant.

Bot. Gaz., vol. xxi, pp. 207-209, pl. xvii, 1896.

Reviews Prof. Knowlton's description of this genus.

336 **Holman** (F. C.). Notes on certain water-worn vein specimens.

Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 514–518, 1896.

Describes an occurrence of water-worn quartz crystals occurring in a gold-bearing quartz vein, and discusses the origin of the attrition and deposition of the material.

337 **Holmes** (J. A.). Corundum deposits of the southern Appalachian region.

U. S. Geol. Surv., 17th Ann. Rept., Pt. III (Cont.), pp. 935–943, 1896.

Describes the occurrence and distribution of corundum in the southern Appalachian region.

338 —— Notes on the kaolin and clay deposits of North Carolina.

Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 929–936, 1896.

Describes the occurrence of kaolin in dikes and of clay deposits containing residual material of dike decomposition. Gives chemical analyses of kaolin and fire clay.

339 —— Notes on the underground supplies of potable waters in the south Atlantic Piedmont plateau.

Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 936–943, 1896.

Describes the general distribution of underground waters in the region and gives a list of flowing wells in the Piedmont plateau of North and South Carolina.

340 **Hoover** (Herbert C.). Some notes on "crossings."

Mining and Scientific Press, vol. lxxii, pp. 166-167, 1896.

Describes the character and origin of certain vein phenomena in gold ore veins of California.

341 —— Mining geology of Cripple Creek, Colorado.

Mining and Scientific Press, vol. lxxiii, pp. 237-238, 1896.

Synopsis of the report of Whitman Cross and R. A. F. Penrose, of the U. S. Geological Survey.

342 **Hopkins** (T. C.). The sandstones of western Indiana.

U. S. Geol. Surv., 17th Ann. Rept., Pt. III (Cont.), pp. 780–787, 1896.

Describes the character and distribution of sandstones of the Carboniferous group in Indiana and gives several chemical analyses.

343 **Hopkins** (T. C.). The Carboniferous sandstones of western Indiana.

Ind. Dept. Geol. and Nat. Res., 20th Ann. Rept., pp. 188–327, pls. viii-xvi; Stone, vol. xiii, pp. 227–238, 334–342, and 456–466, 6 pls., 1896.

Describes the varieties and distribution of sandstones, and the geologic history of the Indiana sandstones, including local details of the different quarries. Gives tables of statistics, analyses, two colored geologic maps of portions of western Indiana and a bibliography.

344 —— The sandstones of western Indiana.

Mineral Industry, 1895, pp. 559–564, 1896.

Describes sandstones of the Carboniferous formation and gives a chemical analysis.

345 **Hoskins** (Leander Miller). Flow and fracture of rocks as related to structure.

U. S. Geol. Surv., 16th Ann. Rept., Pt. I, pp. 845–872, figs. 163–169, 1896.

Discusses the conditions of flow and structure, strain and stress, and their application to rock structure.

346 **Hovey** (Horace C.). The making of Mammoth Cave [Kentucky].

Sci. Amer., vol. lxxv, p. 151, 1896.

Discusses the formation of the Mammoth Cave in Kentucky.

347 —— The colossal cavern of Kentucky.

Sci. Amer., vol. lxxv, p. 183, 1896.

Describes a recently discovered cave in Kentucky.

348 —— Geological notes on the Isles of Shoals [New Hampshire].

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xliv, pp. 136–137, 1896.

Gives a brief description of the island and of the occurrence of granite.

349 **Hubbard** (Lucius L.). The origin of salt, gypsum, and petroleum.

Mich. Geol. Surv., vol. v, Pt. I, pp. ix-xxiv, 1895.

Gives a brief description of the origin of these products.

350 **Hyatt** (Alpheus). Report on the Mesozoic fossils [Alaska].

U. S. Geol. Surv., 17th Ann. Rept., Pt. I, pp. 907–908, 1896.

Describes the relations of Mesozoic faunas of different localities.

351 —— Terminology proposed for description of the shell in Pelecypoda.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xliv, pp. 145–148, 1896.

Describes briefly the characteristics of some shells and gives the author's proposed terminology.

I.

352 **Iddings** (Joseph P.). Igneous rocks [Yellowstone National Park].

U. S. Geol. Surv., Geol. Atlas of U. S., folio No. 30, 1896.

Describes the characters and distribution of the extrusive and intrusive rocks.

353 —— Extrusive and intrusive igneous rocks as products of magmatic differentiation.

London Geol. Soc., Quart. Jour., vol. lii, pp. 606–617, 1896.

Describes the relations of the eruptive rocks of Electric Peak and Sepulcher Mountain to the whole series of eruptions occupying Tertiary time, and which spread out over large areas in Montana, Wyoming, and Idaho. Presents a map showing the extent of the volcanic area.

354 **Ihlseng** (M. C.). A phosphate prospect in Pennsylvania.

U. S. Geol. Surv., 17th Ann. Rept., Pt. III (cont.), pp. 955-957, 1896.

Describes the occurrence of phosphatic material in Juniata County, in the detrital material between the Oriskany sandstone and Lower Helderberg limestone.

355 **Ingalls** (Walter Renton). The tin deposits of Durango, Mexico.

Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 146-163, 1896.

Presents a map of a portion of Mexico showing the location of the tin-ore deposits, describes the general geologic features and the character and distribution of the ore bodies, and discusses their origin.

356 **Irving** (John Duer). The stratigraphical relations of the Browns Park beds of Utah.

N. Y. Acad. Sci., Trans., vol. xv, pp. 252-259, pl. xviii, 1896.

Gives a brief summary of previous work in the Tertiary strata of Utah, reviews certain descriptions of the Browns Park beds, and discusses the evidences as to their geologic age.

J.

357 **Jackson** (Robert Tracy). Studies of Palæchinoidea.

Geol. Soc. Am., Bull., vol. vii, pp. 171-254, pls. 2-9, 1896.

Describes a number of new species from the sub-Carboniferous of the Mississippi basin. Includes discussion of general results and their bearing and a proposed new classification and a bibliography of Paleozoic Echini.

358 —— and **Jagger** (Thomas Agustus, jr.). Studies of Melonites multiporus.

Geol. Soc. Am., Bull., vol. vii, pp. 135-170, 1896.

Describes the spines and the arrangement, development, structure, and variations of the ambulacræ and interambulacral plates, and gives tables of plate arrangement.

359 **Jagger** (Thomas A., jr.), **Jackson** (R. T.) and. Studies of Melonites multiporus.

See Jackson (R. T.) and Jagger (T. A., jr.), No. 358.

360 **James** (Joseph F.). Manual of the paleontology of the Cincinnati group.

Cin. Soc. Nat. Hist., Jour., vol. xviii, pp. 115-140, 1896.

Continues descriptions of fossils from the Cincinnati group in former papers noticed in Bulletins Nos. 130-135 and 146.

361 —— Prof. Lesley's Final Report.

Am. Geol., vol. xviii, pp. 323-329 (correspondence), 1896.

Comprises a general review of Vols. I and II, Final Report of the Second Geological Survey of Pennsylvania.

362 —— Report of the State Geologist of New York for 1893—a correction.

Am. Geol., vol. xviii, pp. 392-393 (correspondence), 1896.

Refers to certain errors in citations.

363 **Johnson** (Guy R.). The Embreville estate, Tennessee.

Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. Eng. and Mg. Jour., vol. lxi, p. 540, 1896.

Describes the geology of the region and the occurrence of iron ores.

364 **Johnston-Lavis** (H. J.). The Highwood Mountains of Montana and magmatic differentiation. A criticism.

Brit. Asso. Adv. Sci., Rept. 1896, pp. 792–793, 1896.

Discusses Weed and Pirsson's paper on the "Highwood Mountains of Montana."

K.

365 **Kain** (Samuel W.). Bibliography of scientific publications relating to the Province of New Brunswick other than those contained in the Bulletins of the Society, 1896.

New Brunswick Nat. Hist. Soc., Bull., No. 14, pp. 56–57, 1896.

366 **Keith** (Arthur). Loudon folio, Tennessee.

U. S. Geol. Surv., Geol. Atlas of the U. S., folio No. 25, 1896.

Describes the physiographic and stratigraphic features of the region, the character and distribution of certain rocks of unknown age and of the Cambrian, Silurian, Devonian, and Carboniferous strata, the geologic structure of the region, and the occurrence of coal and building stones. Includes topographic, geologic structure section maps and a sheet of columnar sections.

367 —— Morristown folio, Tennessee.

U. S. Geol. Surv., Geol. Atlas of U. S., folio No. 27, 1896.

Describes the physiographic and stratigraphic features of the region, the occurrence of Cambrian, Silurian, Devonian and Carboniferous rocks. Discusses the geologic structure and gives an account of the marble and building stone resources. Includes topographic, geologic, and structure section maps and a sheet of columnar sections.

368 —— Briceville folio, Tennessee.

U. S. Geol. Surv., Geol. Atlas of the U. S., folio No. 33, 1896.

Describes the physical features of the Appalachian province, the topographic and stratigraphic features of the quadrangle, the character and distribution of the Cambrian, Silurian, Devonian, and Carboniferous strata, the geologic structure, and the occurrence of coal, marble, iron, clay, and building stones. Includes topographic, geologic, and structure section maps.

369 —— Some stages of Appalachian erosion.

Geol. Soc. Am., Bull., vol. vii, pp. 519–525, pl. 24, 1896.

Describes the drainage features, surface forms, and variations of level in the southern Appalachians, and the peneplains of the Tennessee basin.

370 **Kemp** (James Furman). Titaniferous iron ores of the Adirondacks.

Abstract: Geol. Soc. Am., Bull., vol. vii, p. 15, 1896.

Gives a classification and a brief description of the forms and character of the ore bodies.

371 **Kemp** (James Furman). Illustrations of the dynamic metamorphism of anorthosites and related rocks in the Adirondacks.

Abstract: Geol. Soc. Am., Bull., vol. vii, pp. 488–489, 1896.

Gives a brief description of intrusive gabbros associated with crystalline limestones and gneisses of sedimentary origin.

372 —— Lecture notes on rocks.

School of Mines Quart., vol. xvii, pp. 38–56, 128–159, 267–295, and 401–434, 1896.

Discusses the classification of rocks and the chemical and petrographic characters of igneous rocks. Describes the formation and character of sedimentary deposits and the rocks produced by contact and regional metamorphism.

372*a* —— A handbook of rocks for use without the microscope.

N. Y., 1896, 176 pp.

373 —— The great quartz vein at Lantern Hill, Mystic, Conn., and its decomposition.

Abstract: N. Y. Acad. Sci., Trans., vol. xv, p. 189, 1896.

Gives a brief statement of the occurrence of the vein and the microscopic character of the material.

374 —— The pre-Cambrian topography of the Adirondacks.

Abstract: N. Y. Acad. Sci., Trans., vol. xv, pp. 189–190, 1896.

Discusses briefly the evidences as to the general features of pre-Cambrian topography.

375 —— [Review of "Geologic Survey of New Jersey. Annual report of the State geologist for the year 1894."]

Science, new ser., vol. iv, pp. 693–694, 1896.

376 —— [Origin of ore deposits.]

Can. Rec. Sci., vol. vii, pp. 189–191, 1896.

Discusses briefly the origin of ore deposits in igneous magmas.

377 —— An outline of the views held to-day on the origin of ores.

Mineral Industry, 1895, pp. 755–766, 1896.

Reviews the published opinions of certain geologists on the origin of ore deposits.

378 **Kempton** (C. W.). The tin deposits of Durango [Mexico].

Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 997–998, 1896.

In discussion of paper on the same subject by W. R. Ingalls, mentions an occurrence of tin placers at Sain Alto, Zacatecas, Mexico.

379 **Kendall** (Percy F.). The ancient and modern glaciers of North America.

Abstract: Leeds Geol. Assoc., Trans., Pt. IX, pp. 37–41, 1895.

Describes preexisting and present glacial phenomena in North America.

380 **Keyes** (Charles Rollin). Organization and results of a State Geological Survey, embracing the Third Biennial report of the State Geologist [Missouri].

Mo. Geol. Surv., vol. viii, pp. 14–79, 1895.

Describes the general plan of the organization, the progress of the work, prospective work, and the future operations of the Missouri Geological Survey.

381 **Keyes** (Charles Rollin). General geology of the Missouri crystalline area.

Mo. Geol. Surv., vol. viii, pp. 84-101, 1895.

Describes the geographic distribution, physiography, and the general character and geologic structure of the igneous rocks.

382 —— Characteristics of the Ozark Mountains.

Mo. Geol. Surv., vol. viii, pp. 317-352, 1895.

Describes the topographic and drainage features, the distribution of the Archean, Algonkian, Cambrian, Silurian, Devonian, Carboniferous and Cretaceous crystalline and sedimentary rocks, and the general features of the geologic structure and deformation. Discusses the age of the uplift.

383 —— A report on Mine la Motte sheet including portions of Madison, St. Francois and Ste. Genevieve counties [Missouri].

Mo. Geol. Surv., vol. ix, sheet rept., No. 4, 132 pp., pls. i-xiv, figs. 1-27; Eng. and Mg. Jour., vol. lxii, p. 485 (½ p.), 1896.

Describes the physiography, the relations, lithologic character and structure of the Archean and Cambrian formations, and the occurrence of lead, iron, copper, manganese, nickel, cobalt, silver, building stone, and clay.

384 —— Bibliography of Missouri geology.

Mo. Geol. Surv., vol. ix, pp. 221-523, 1896.

Comprises an author's list of titles, a title index and subject and cross references.

385 —— The Mine la Motte sheet [Missouri].

Mo. Geol. Surv., folio No. 4, 1896.

Gives an abstract of the report and geologic and topographic maps of the region.

386 —— Geographic relations of the granites and porphyries in the eastern part of the Ozarks.

Geol. Soc. Am., Bull., vol. vii, pp. 363-376, pl. 17, 1896.

Describes the general geology of the region and the lithologic characters of the granites and porphyries. Gives an account of former and recent investigations, discusses the origin, distribution, and age of the crystalline rocks and the physiography and erosion of the region.

387 —— [Review of "North American fossil Crinoidea Camerata," by Charles Wachsmuth and Frank Springer.]

Jour. of Geol., vol. iv, pp. 221-240, 1896.

388 —— [Review of the following papers: "Stratigraphy of Kansas Coal Measures," by Erasmus Haworth; "Classification of the Upper Paleozoic rocks of central Kansas," by C. S. Prosser; and "Permian system of Kansas," by F. W. Cragin.]

Jour. of Geol., vol. iv, pp. 520-524, 1896.

389 **Keyes** (Charles Rollin). [Review of "Great Valley of California: a criticism of the theory of isostasy," by F. Leslie Ransome; "British geology," by T. Mallard Reade; and "Notes on the gravity determinations reported by Mr. G. R. Putnam," by G. K. Gilbert.]

Jour. of Geol., vol. iv, pp. 729–733, 1896.

390 —— [Review of "Text-book of Paleontology, vol. i, Part I," by K. A. von Zittel.]

Jour. of Geol., vol. iv, pp. 733–738, 1896.

391 —— The Bethany limestone of western interior coal field.

Am. Jour. Sci., 4th ser., vol. ii, pp. 221–225, 1896.

Discusses the use of the terms Bethany and Erie limestone and gives a list of bibliographic references.

392 —— Biographical sketch of Charles Wachsmuth.

Am. Geol., vol. xvii, pp. 131-136, pl. vi, 1896.

Gives a sketch of the life of Wachsmuth and a list of his principal scientific publications.

393 —— Thickness of the Paleozoic rocks in the Mississippi basin.

Am. Geol., vol. xvii, pp. 169–173, 1896.

Discusses the evidences of the thickness of the Paleozoic series in Missouri, with special reference to the thickness of the Carboniferous series.

394 —— Serial nomenclature of the Carboniferous.

Am. Geol., vol. xviii, pp. 22–28, 1896.

Reviews the history of the nomenclature of the Carboniferous in the Mississippi Valley.

395 —— Orotaxis: a method of geologic correlation.

Am. Geol., vol. xviii, pp. 289-302, 1896.

Discusses the value of biotic and of physical methods of correlation and of the practicability of defining stratigraphic succession by the succession of orographic movements.

396 —— A gigantic orthoceratite from the American Carboniferous.

Science, new ser., vol. iii, pp. 94–95, 1896.

Describes briefly the occurrence of the Orthoceras group in Paleozoic rocks and the occurrence of O. fauslerensis in the Carboniferous rocks of Iowa.

397 —— [Review of "Iowa Geological Survey, Vol. V, Annual Report for 1895."]

Science, new ser., vol. iv, p. 408, 1896.

398 —— Note on the nature of cone-in-cone.

Iowa Acad. Sci., Proc., vol. iii, pp. 75–76, 1896.

Describes specimens found in Iowa which contain a large percentage of lime.

399 —— Two remarkable cephalopods from the upper Paleozoic.

Iowa Acad. Sci., Proc., vol. iii, pp. 76–78, fig. 4, 1896.

Describes Nautilus ponderosus and Orthoceras fauslerensis from the Coal Measures of Iowa.

400 **Keyes** (Charles Rollin). Ueber das Carbon des Mississippithales.

Neues Jahr. für Min., etc., 1896, Band 1, pp. 96–110, 1896.

Gives the classification of the Carboniferous beds of the Mississippi Valley and describes their characters and distribution.

401 —— Iowa gypsum.

Mineral Industry, 1895, pp. 379–396, 2 pls., 1896.

Describes the gypsum deposits and discusses the age of the strata.

402 —— Missouri building and ornamental stones.

Stone, vol. xii, pp. 432–436, 546–557; vol. xiii, pp. 30–32, pls. 2–14; Eng. and Mg. Jour., vol. lxii, pp. 199–201, 1896.

Describes the distribution and petrographic characters of granite, syenite, and porphyry suitable for building stones.

403 —— Central Maryland granites.

Stone, vol. xiii, pp. 421–428, 527–531; vol. xiv, pp. 20–24, pls. 1–2, 1896.

See Bibliography and Index for 1895, No. 251.

404 **Killebrew** (J. B.). The phosphate deposits in Maury County, Tennessee.

Eng. and Mg. Jour., vol. lxii, pp. 462–463, 1896.

Describes the character and occurrence of phosphate in this county.

405 **Kindle** (Edward M.). The whetstone and grindstone rocks of Indiana.

Ind. Dept. of Geol. and Nat. Res., 20th Ann. Rept., pp. 329–368, with geologic map, 1896.

Gives a historical sketch of the whetstone area, describes its topography and geologic features and the character and distribution of the beds. Includes a paper on the "Fossil plants of the Hindostan whetstone beds" by David White.

406 —— The relation of the fauna of the Ithaca group to the faunas of the Portage and Chemung.

Am. Pal., Bull., vol. ii, No. 6, 54 pp., 1 pl., 1896.

Reviews the previous work on the upper Devonian of New York, and describes sections in the vicinity of Ithaca, giving lists of fossils collected. Gives a list of fossils occurring in the Portage and Ithaca faunas and a list of important papers consulted, and describes two new species.

407 —— On some Paleozoic fossils from Baffinland.

Am. Jour. Sci., 4th ser., vol. ii, pp. 455–456 (communicated), 1896.

Remarks on the occurrence of Silurian fossils in erratics.

408 **Kirk** (M. Z.). A geologic section along the Neosho and Cottonwood rivers [Kansas].

Univ. Geol. Surv. of Kans., vol. i, pp. 72–85, pl. iii, 1896.

Describes the lithologic character and the succession of the Carboniferous rocks of the region.

408*a* —— The sands of the Kansas River valley.

Kans. Univ. Quart., vol. iv, pp. 125–128, 1896.

Describes the character and distribution of the sands of this valley and discusses their origin.

409 **Klittke** (M.). Entwicklung, Organization und Leistungen der geologischen Landesaufnahmen in der Vereingten Staaten von Nordamerika.

Zeit. für prak. Geol., 1896, pp. 211-213 and 289-352, 1896.

Gives a historical sketch of the work of the U. S. Geological Survey and of the other National and State geological surveys.

410 **Knerr** (E. B.). A geologic section from Atchison to Banes [Kansas] along the central branch of the Missouri Pacific Railway.

Univ. Geol. Surv. of Kans., vol. i, pp. 140-144, pl. viii, 1896.

Describes the succession of the Carboniferous and Permo-Carboniferous beds of the region.

411 —— Coal in Atchison County, Kans.

Kans. Acad. Sci., Trans., vol. xiv, pp. 216-217, 1896.

Describes the occurrence of coal in the bluffs of the Missouri River, near the city of Atchison, and gives its chemical analyses.

412 **Knight** (F. C.). A suspected new mineral from Cripple Creek [Colorado].

Read before the Colorado Scientific Society, in Denver, Colo., Oct. 1, 1894, 6 pp.

Describes the chemical character of the material.

413 **Knight** (Wilbur C.). The Salt Creek oil field, Wyoming.

Eng. and Mg. Jour., vol. lxi, pp. 87-88, 1896.

Describes briefly the Cretaceous strata in which the oil occurs.

414 —— The geology and technology of the Salt Creek oil field [Wyoming].

Wyoming Univ., School of Mines, Petroleum series, Bull. No. 1, 22 pp., 1896.

Describes the character and occurrence of the oil in Cretaceous strata.

415 **Knowlton** (F. H.). Report on the fossil plants collected in Alaska in 1895, as well as an enumeration of those previously known from the same region, with a table showing their relative distribution.

U. S. Geol. Surv., 17th Ann. Rept., Pt. I, pp. 876-897, 1896.

Gives a list of fossil plants and localities from which they were collected, and a table showing their distribution.

416 —— The fossil plants of the Denver Basin [Colorado].

U. S. Geol. Surv., Mon. xxvii, pp. 466-473, 1896.

Gives a list of fossil plants from the Dakota group and a brief account of the flora of the Dakota, Laramie, and Denver beds.

417 —— Report on the flora of Independence Hill [California].

Jour. of Geol., vol. iv., pp. 886-893, 1896.

Gives a list of the fossils collected and discusses their relations with Tertiary faunas of other regions.

418 **Knowlton** (F. H.). The Tertiary floras of the Yellowstone National Park.

Am. Jour. Sci., 4th ser., vol. ii, pp. 51–58, 1896.

Gives a brief account of the geology of the Park, names the fossil plants found in the Tertiary beds, and discusses the relations of the present and Tertiary floras.

419 —— Report on a collection of fossil plants from Morgantown, W. Va.

Am. Geol., vol. xviii, pp. 370–372, 1896.

Gives a list of species collected in the Glacial beds of this locality.

420 —— Description of a supposed new species of fossil wood from Montana.

Torrey Bot. Club., Bull., vol. xxiii, pp. 250–252, pl. 271, 1896.

Describes Pityoxylon pealei n. sp., from Miocene strata of Montana.

421 **Kraatz** (K. von). Note on the formation of gold ore.

Am. Geol., vol. xviii, pp. 100–108 (translated by N. H. Winchell), 1896.

Discusses the various theories as to the origin and deposition of gold-ore bodies.

422 **Kümmel** (Henry B.). Note on the glaciation of Pocono Knob and Mounts Ararat and Sugar Loaf, Pennsylvania.

Am. Jour. Sci., 4th ser., vol. i, pp. 113–114, 1896.

Gives the author's recent observations on the glacial geology of the region.

L.

423 **Ladd** (George T.). Notes on certain undescribed clay occurrence in Missouri.

Science, new ser., vol. iii, pp. 691–693, 1896.

Describes the occurrence of fireclay in the Paleozoic rocks of Missouri.

424 **Lakes** (Arthur). Sketch of a portion of the Gunnison gold belt, including the Vulcan and Mammoth Chimney mines [Colorado].

Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. 440–448, figs. 1–2, 1896.

Describes the igneous rocks of the region and the occurrence of gold ores.

425 —— Cripple Creek [Colorado].

Sci. Amer. Suppl., vol. xlvi, pp. 17192–17193, 1896.

Describes the occurrence of the gold ores of Cripple Creek, Colorado.

426 —— The placers of North America.

Colliery Eng., vol. xvi, pp. 195–197, 1896.

Describes the character and distribution of placer deposits in different parts of North America.

427 —— The Oquirrh Mountains or the Mercur mining district [Utah].

Colliery Eng., vol. xvi, pp. 243–245, 1896.

Describes the geologic features of the region and the occurrence of the gold and silver ores.

428 **Lakes** (Arthur). Iron and manganese. The great Cebolla River deposits [Colorado].

Colliery Eng. vol. xvi, pp. 267-268, 1896.

Describes the occurrence of the ore bodies and discusses their origin.

429 —— Pikes Peak [Colorado].

Colliery Eng., vol. xvii, pp. 59-60, 1896.

Describes the character of the Pikes Peak granite and its disintegration.

430 —— The Cripple Creek region. Epitome of the U. S. Geological Survey's report on the Cripple Creek mining region [Colorado].

Colliery Eng., vol. xvii, pp. 105-110, 1896.

Gives a résumé of this report.

431 —— Summit district gold regions. An epitome of a description of the ore deposits of Summit district, Rio Grande County, Colorado, by R. C. Hills.

Colliery Eng., vol. xvii, pp. 164-165, 1896.

Describes the occurrence and character of the gold ores.

432 —— The San Juan region [Colorado].

Colliery Eng., vol. xvii, pp. 206-209, 1896.

Describes the topographic and geologic features of the region.

433 —— Victor (Cripple Creek), Colorado.

Colliery Eng., vol. xvii, pp. 210-211, 1896.

Describes the occurrence of gold at this locality.

434 **Lambe** (Lawrence M.). Description of a supposed new genus of Polyzoa from the Trenton limestone at Ottawa [Ontario].

Can. Rec. Sci., vol. vii, pp. 1-3, pl. 1, 1896.

Describes Astroporites ottawaensis n. sp.

435 **Lane** (Alfred C.). The geology of Lower Michigan, with reference to deep borings. Edited from notes of C. E. Wright, late State geologist.

Mich. Geol. Surv., vol. v., Pt. II, pp. 1-100, pls. i-lxxiii, and map of Lower Michigan, 1895.

Describes the character of the Silurian, Devonian, and Carboniferous formations as shown by a large number of artesian borings. Describes the occurrence of coal, gypsum, natural gas, and petroleum.

436 **Langdon** (Daniel W.). The Loop Creek, West Virginia, coal field.

Colliery Eng., vol. xvi, p. 122, 1896.

Gives a section of the strata and a chemical analysis of the coal.

437 **Lawson** (Andrew C.). On malignite—a family of basic plutonic orthoclase rocks rich in the alkalies and lime, intrusive in the Coutchiching schists of Poohbah Lake [Ontario].

Univ. of Cal., Dept. of Geol., Bull., vol. ii, pp. 337-362, pl. 18, 1896.

Describes the field relations of the rocks occurring in the Province of Ontario and their petrographic characteristics.

438 **Leach** (J. C.). Report of the State natural gas supervisor [Indiana].

Ind. Dept. of Geol. and Nat. Res., 20th Ann. Rept., pp. 369–410, 1896.

Describes the occurrence of natural gas in the Trenton limestones and the general geologic features of the area, including a map of the natural gas field of Indiana.

439 **Leckie** (R. G. E.). Notes on the Grand Lake coal field of New Brunswick.

Can. Mg. Review, vol. xv, pp. 90–91, 1896.

Describes the geologic features and occurrence and chemical characters of the coal.

440 **Le Conte** (Joseph). Elements of geology. A text-book for colleges and for the general reader.

Fourth edition, 1896. D. Appleton & Co., N. Y.

441 **Leonard** (A. G.). Lead and zinc deposits of Iowa.

Iowa Geol. Surv., vol. vi, 66 pp., 2 pls., 19 figs., 1896.

Describes the character and occurrence of the various members of the Cambrian and Silurian series and the mode of occurrence of the lead and zinc ore bodies, and discusses their origin.

442 —— Lead and zinc deposits of Iowa.

Eng. and Mg. Jour., vol. lxi, p. 614, 1896.

Describes the occurrence of lead and zinc in the Galena limestone.

443 —— Lead and zinc. A description of the mines of Iowa in the Upper Mississippi region.

Colliery Eng., vol. xvii, pp. 121–122, 1896.

Describes the geology of the region and the occurrence of the ore bodies.

444 **Lesley** (J. P.). Atlas to accompany Report F3 [Pennsylvania].

Pa. Geol. Surv., Atlas Rept. F3, 1896.

Contains a geologic map of Stone Mountain fault, geologic and topographic map of parts of Huntingdon, Mifflin, Center, and Union counties, and a sheet of cross sections.

445 **Leverett** (Frank). The water resources of Illinois.

U. S. Geol. Surv., 17th Ann. Rept., Pt. II, 155 pp., pls. cviii–cxiii, figs. 66–74, 1896.

Describes the physiographic and drainage features and the occurrence and chemical composition of artesian waters. Includes a paper by J. A. Udden on the Paleozoic rocks at Rock Island, Ill.

446 **Lewis** (J. Volney). Corundum of the Appalachian crystalline belt.

Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 852–906, 1896.

Reviews the literature on corundum, describes the character of the peridotites and pyroxenites, amphibolites and secondary rocks of the corundum region, and the character, mode of occurrence, and distribution of corundum. Includes a bibliography of the subject and a map showing the location of the corundum deposits.

447 **Lindgren** (Waldemar). Nevada City special folio, California.

U. S. Geol. Surv., Geol. Atlas of U. S., folio No. 29, 1896; Abstract: Mining and Scientific Press, vol. lxxiii, pp. 480 and 502, 1896.

Describes the physiographic and general geologic features of the quadrangle, the character and distribution of the Paleozoic, Neocene and Pleistocene strata, and of the igneous rocks, and the occurrence of auriferous gravels and gold quartz veins. Includes topographic, geological, and structure section maps.

448 —— Pyramid Peak folio, California.

U. S. Geol. Surv., Geol. Atlas of U. S., folio No. 31, 1896.

Includes a description of the geology of the gold belt of California. Describes the topography, the character and distribution of the Carboniferous and Juratrias, Neocene, and Pleistocene formations and of the igneous rocks and the occurrence of auriferous gravels. Includes topographic, geologic, and structure section maps.

448*a* —— The gold quartz veins of Nevada City and Grass Valley districts, California.

U. S. Geol. Surv., 17th Ann. Rept., Pt. II, 262 pp., 24 pls., 37 figs., 1896.

Describes the character and distribution of the igneous and sedimentary rocks and of the ore bodies. Discusses the origin of the ores and of the vein systems, and includes detailed descriptions of mines.

449 —— Age of the auriferous gravels of the Sierra Nevada. With a report on the flora of Independence Hill [California].

Jour. of Geol., vol. iv, pp. 881–906, 1896.

Reviews the paleobotanical evidence of the age of the beds and discusses the post-Jurassic history of the Sierra Nevada and the correlation of these beds with those of the Coast ranges.

450 —— The gold quartz veins of California.

Am. Geol., vol. xvii, pp. 338–339 (correspondence), 1896.

Refers to an article by H. W. Fairbanks on "The mineral deposits of eastern California," and to certain criticisms on the author's former paper on the gold quartz veins of California.

451 **Lobley** (J. Logan). The foldings of the rocks.

Sci. Amer. Suppl., vol. xlii, pp. 17225–17226, 1896.

Describes the foldings of rocks in North America and in other parts of the world.

452 **Loring** (Frank C.). Mineral resources of British Columbia.

Eng. and Mg. Jour., vol. lxii, p. 148 (½ p.), 1896.

Gives a brief note on the occurrence and extent of the Trail Creek ore bodies.

453 **Lucas** (A. P.). The Avery Island salt mine and the Joseph Jefferson salt deposit, Louisiana.

Eng. and Mg. Jour., vol. lxii, pp. 463–464, 1896.

Describes the occurrence of salt and the system of mining.

454 **Luquer** (Lea McI.). The mineral of the pegmatite veins at Bedford, N. Y.

Am. Geol., vol. xviii, pp. 259–260, 1896.

Contains brief notes on the minerals occurring in these veins.

455 **Luquer** (Lea McI.). Optical mineralogy.

School of Mines Quart., vol. xvii, pp. 435–469, 29 figs., 1896.

Gives a brief sketch of elementary optics for optical mineralogy and describes the use of the petrographic microscope and the manner of studying the microscopic and optical characters of minerals.

456 —— and Riės (Heinrich). The "augen"-gneiss area, pegmatite veins and diorite rocks at Bedford, N. Y.

Am. Geol., vol. xviii, pp. 239–258, pls. viii–ix, figs. 3–4, 1896.

Describes the characters of the pegmatite veins and diorite dike rocks, and the petrographic characters of the augen-gneiss, schists, and diorites. Reviews the literature on the origin of augen-gneiss.

457 **Lyman** (Benjamin Smith). Note on the trap rock of the Palisades.

Am. Jour. Sci., 4th ser., vol. i, p. 149 (¾ p.), (communicated), 1896.

Brief note on the intrusive character of the trap of the Palisades.

458 —— Folds and faults in Pennsylvania anthracite beds.

Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 327–369 and 1010–1011, pls. i–xxxiv, 1896.

Gives a brief discussion of the folds and faults of the Appalachian region of Pennsylvania, illustrated by 177 cross sections made by the Pennsylvania Geological Survey.

M.

459 **McCalley** (Henry). On the Tennessee Valley region [Alabama].

Ala. Geol. Surv., Rept. on the Valley regions of Alabama, Pt. I, 436 pp., pls. i–ix, figs. 1–4, 1896.

Describes the physiography of the region, the general features of the Silurian, Devonian, Carboniferous, Cretaceous, and Tertiary strata, and the occurrence of coal, iron, asphaltum, petroleum, natural gas, building stone, abrasive materials, clay, and mineral waters, and gives local geologic details by counties.

460 —— The limonites of Alabama geologically considered.

Eng. and Mg. Jour., vol. lxii, pp. 583–584, 2 pls., 1896.

Describes the occurrence of the limonite deposits of Alabama.

461 **McCarn** (H. L.). Pine Creek district, Colorado.

Mining and Scientific Press, vol. lxxiii, p. 173, 1896.

Describes the general geology of the region and the occurrence and character of the gold ores.

462 **McConnell** (R. G.). Report on an exploration of the Finlay and Omenica rivers [British Columbia].

Canada Geol. Surv., new ser., vol. vii, Rept. C, 40 pp., 2 pls., 1896.

Describes the physiography of the region and includes notes on the occurrence of Archean, Cambrian, Carboniferous, Juratrias, Tertiary rocks, and Glacial deposits.

463 —— Glacial deposits of southwestern Alberta in the vicinity of the Rocky Mountains.

See Dawson (G. M.), No. 175.

464 **Macfarlane** (Graham). The eastern coal regions of Kentucky.

Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 518–532, figs. 1–5, 1896.

Gives a section showing the vertical distribution of the coal seams and describes the general features of the Coal Measures of the region.

465 **McGee** (W. J.). Expedition to Seriland [Mexico].

Science, new ser., vol. iii, pp. 493–505, 1896.

Describes briefly the general geographic and geologic features of the region.

466 —— Two erosion epochs. Another suggestion.

Science, new ser., vol. iii, pp. 796–799, 1896.

Discusses the evidences of the age of the deposition and degradation of the Potomac and Lafayette formations.

467 **MacKay** (A. H.). A foraminiferous deposit from the bottom of the North Atlantic.

N. S. Inst. Sci., Proc. and Trans., 2d ser., vol. ii, pp. 64–67, 1896.

Describes the character of the material and names the species determined.

468 **Marbut** (Curtis Fletcher). Dictionary of altitudes [Missouri].

Mo. Geol. Surv., vol. viii, pp. 227–316, 1895.

Gives the altitudes of localities in various parts of the State and along the several railway lines.

469 —— Physical features of Missouri.

Mo. Geol. Surv., vol. x, pp. 14–109, pls. i–xi, figs. 1–19, 1896.

Describes the hydrographic and physiographic features of Missouri and discusses the age of the peneplain.

470 —— **Woodworth** (J. B.) and. The Queen's River moraine in Rhode Island.

See Woodworth (J. B.) and Marbut (C. F.), No. 778.

471 —— **Shaler** (N. S.), **Woodworth** (J. B.), and. The glacial brick clays of Rhode Island and southeastern Massachusetts.

See Shaler (N. S.), Woodworth (J. B.), and Marbut (C. F.), No. 612.

472 **Marcou** (Jules). The Jura of Texas.

Boston Soc. Nat. Hist., Proc., vol. xxvii, pp. 149–158, 1896.

Reviews the literature on the subject and discusses the paleontologic evidence as to the age of certain areas in Texas.

473 —— The Jura in the United States.

Science, new ser., vol. iv, pp. 945–947, 1896.

Discusses briefly the age of the Potomac formation.

474 **Margerie** (Emmanuel de). Catalogue des Bibliographies géologiques. Paris, 1896. 733 pp.

475 **Marsh** (Othniel C.). On the Pithecanthropus erectus from the Tertiary of Java.

Abstract: Am. Jour. Sci., 4th ser., vol. i, pp. 475–482, pl. xiii, figs. 1–6, 1896.

476 **Marsh** (Othniel C.). A new belodent reptile (Stegomus) from the Connecticut River sandstone.

Am. Jour. Sci., 4th ser., vol. ii, pp. 59-62, pl. 1, figs. 1-3, 1896.

Describes and figures a new species of Belodontia from the Connecticut River sandstone at New Haven, Conn., and discusses its relations to other reptilian forms of this horizon.

476 —— The geology of Block Island [Rhode Island].

Am. Jour. Sci., 4th ser., vol. ii, pp. 295-298 and 375-377, 1896.

Compares the clay beds of Block Island with those of the Potomac formation of Maryland and the Raritan clays of New Jersey. Discusses the origin of the clays, considers the clays of Marthas Vineyard are Jurassic and resemble the Block Island clays. In the second paper reviews the literature of the subject.

478 —— Amphibian footprints from the Devonian.

Am. Jour. Sci., 4th ser., vol. ii, pp. 374-375, 1896.

Describes a footprint from upper Devonian strata of Pennsylvania.

479 —— The Jurassic formation on the Atlantic Coast.

Am. Jour. Sci., 4th ser., vol. ii, pp. 433-447, 1896.

Describes the Baptanodon and Atlantosaurus beds of the West, and gives a general section showing the lithologic character and the horizons of vertebrate fossils of the Cenozoic and Mesozoic series. Describes the Pleurocœlus beds and the Potomac formation. Discusses the relative importance of fossils, the age of the Wealden and the Laramie, and the position and character of the Jurassic, and reviews the work of early investigators.

480 —— The dinosaurs of North America.

U. S. Geol. Surv., 16th Ann. Rept., Pt. I, pp. 143-244, pls. ii-lxxxv, figs. 1-66, 1896.

Describes the characters of the Jurasic and Triassic dinosaurs and discusses their affinities and classification.

481 —— Vertebrate fossils [Denver Basin, Colorado].

U. S. Geol. Surv., Mon. xxvii, pp. 473-527, pls. xxi-xxxi, figs. 23-102, 1896.

Gives a brief account of the succession and distribution of the Jurassic, Cretaceous, and Tertiary beds, and the description of the vertebrata collected.

482 —— The Jurassic formation on the Atlantic coast.

Abstract: Science, new ser., vol. iv, pp. 805-816, 1896.

Gives a table of the geologic horizons of vertebrate fossils of the Mesozoic and Cenozoic eras and discusses the evidences of the Jurassic age of the Potomac beds.

483 —— Restoration of some European dinosaurs, with suggestions as to their place among the Reptilia.

Abstract: Geol. Mag., dec. 4, vol. iii, pp. 1-9, pls. i-iv, 1896.

Noticed in Bibliography and Index for 1895.

484 —— Classification of dinosaurs.

Geol. Mag., dec. 4, vol. iii, pp. 388-400, 1896.

Noticed in Bibliography and Index for 1895.

485 **Mathews** (Edward B.). Notes on some flattened garnets from North Carolina.

Johns Hopkins Univ. Circ., vol. xv, p. 8, 1895.

Describes the crystallographic characters of the material.

486 **Matthew** (G. F.). Notes on Cambrian faunas, the genus Microdiscus.

Am. Geol., vol. xviii, pp. 28-31, 1896.

Discusses the relations of the species of Microdiscus and describes M. schucherti n. sp.

487 —— Traces of the Ordovician fauna on the Atlantic coast.

Canada Roy. Soc., Proc. and Trans., 2d ser., vol. i, sect. iv, pp. 253-271, pl. i, 1896.

Describes a number of new species from Newfoundland and Cape Breton Island.

488 —— Organic remains of the Little River group. No. IV.

Canada Roy. Soc., Proc. and Trans., 2d ser., vol. i, sect. iv, pp. 273-279, pl. ii, 1896.

Describes new genera and species from Cambrian rocks of New Brunswick.

489 —— On the occurrence of cirripedes in the Cambrian rocks of North America.

N. Y. Acad. Sci., Trans., vol. xv, pp. 144-146, figs. 1-2, 1896.

Describes the occurrence of plates for which the name Cerripodites is proposed.

490 —— Faunas of the Paradoxides beds in eastern North America No. 1.

N. Y. Acad. Sci., Trans., vol. xv, pp. 192-247, pls. xiv-xvii, 1896.

Describes the characters of minute crustaceans and of the genera Agnostus and Microdiscus and their species.

491 —— Some features of the early Cambrian faunas.

Brit. Assoc. Adv. Sci., Rept. 1896, pp. 785-787, 1896.

Remarks on the general characters and distribution of Cambrian trilobites, brachiopods, and of the Ostracoda.

492 **Mendenhall** (Walter C.), **Campbell** (Marius R.) and. Geologic section along the New and Kanawha rivers in West Virginia.

See Campbell (M. R.) and Mendenhall (W. C.), No. 99.

493 **Merriam** (John C.). Sigmogomphius lecontei, a new castoroid rodent from the Pliocene, near Berkeley, Cal.

Univ. of Cal., Dept. of Geol., Bull., vol. i, pp. 363-370, figs. 1-2, 1896.

Gives a history of the Castoridæ, a description of the fossil remains collected, and a comparison with other castoroid genera, and describes their geologic and geographic distribution.

494 —— Note on two Tertiary faunas from the rocks of the southern coast of Vancouver Island [British Columbia].

Univ. of Cal., Dept. of Geol., Bull., vol. ii, pp. 101-108, 1896.

Gives a list of the fossils of the two faunas and discusses their age and relationship.

495 **Merrill** (Frederick J. H.). Mineral resources of New York State.

N. Y. State Mus., Bull., vol. iii, No. xv, pp. 365–595, two geologic maps in pockets, 1895.

Describes the general characters and occurrence of building stones in the Cambrian, Silurian, and Devonian strata, and the occurrence of clay, salt, abrasive materials, petroleum. Gives list of the quarries, clay manufacturers, producers of lime and cement, and mineral springs of New York.

496 —— Post-Pliocene deposits of Sankaty Head [Massachusetts].

N. Y. Acad. Sci., Trans., vol. xv, pp. 10–16, 1896.

Gives a section and list of contained fossils of beds formed of transported material in the island of Nantucket.

497 —— Notes on the geology of Block Island [Rhode Island].

N. Y. Acad. Sci., Trans., vol. xv, pp. 16–19, 1896.

Describes two sections, and concludes they are post-Pliocene and are underlaid by Cretaceous sands and clays.

498 **Merrill** (George Perkins). Notes on asbestus and asbestiform minerals.

U. S. Nat. Mus., Proc., vol. xviii, pp. 281–299, 1896.

Describes the material from different parts of the United States, and suggests that the material used commercially is usually anthophyllite.

499 —— Disintegration and decomposition of diabase at Medford, Mass.

Geol. Soc. Am., Bull., vol. vii, pp. 349–362, pl. 16, 1896.

Describes the occurrence of the dike, and gives a mechanical analysis of the disintegrated rock and chemical analyses of fresh and disintegrated diabase. Compares these analyses with those of diabase from Venezuela and granite from the District of Columbia. Discusses the "time limit and extent of disintegration" and "the relative rapidity of rock weathering in high and low latitudes."

500 —— The principles of rock weathering.

Jour. of Geol., vol. iv, pp. 704–724 and 850–871, 1896.

Reviews some of the literature of the subject and describes the agencies that promote rock weathering.

501 —— An occurrence of free gold in granite.

Am. Jour. Sci., 4th ser., vol. i, pp. 309–311, 1896.

Describes an occurrence of gold embedded in the clear glassy quartz and unfissured feldspars of a granitic rock from Mexico.

502 —— On the composition and structure of the Hamblen County, Tenn., meteorite.

Am. Jour. Sci., 4th ser., vol. ii, pp. 149–155, figs. 1–2, 1896.

Describes the occurrence, chemical composition, and optical characters of the meteorite.

503 —— The onyx marbles: Their origin, composition, and uses, both ancient and modern.

Stone, vol. xii, pp. 116–121, 228–236, 326–330, 425–429, 559–564; vol. xiii, pp. 9–12, 116–120, pls. 5–18, 1896.

See Bibliography and Index for 1895, No. 339.

504 **Merrill** (J. A.). Fossil sponges of the flint nodules in the Lower Cretaceous of Texas.

Harv. Coll., Mus. Comp. Zool., Bull., vol. xxviii, No. 1, 26 pp., pl. 1, 1896.

Describes the general character of the flint nodules and of the contained organisms, the preservation of the sponge spicules, and the specific characters of the specimens, including some new species.

505 **Mezger** (C. A.). The monazite districts of North and South Carolina.

Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 822-826 and 1038-1039, 1896.

Describes the occurrence of monazite in gneiss and mentions the associated minerals. Discusses the characters of augen-gneiss.

506 **Miers** (Henry A.). Precious stones.

Sci. Amer. Suppl., vol. xlii, pp. 17298-17299 and 17308-17309, 1896.

Describes the optical properties of precious stones.

507 **Miller** (Arthur M.). The association of the gasteropod genus Cyclora with phosphate of lime deposits.

Am. Geol., vol. xvii, pp. 74-76, 1896.

Describes the investigation as to the origin and nature of the Tennessee phosphate deposits, and gives chemical analyses of the Cyclora casts and of the rock in which they occur.

508 **Miller** (S. A.) and **Gurley** (William F. E.). Descriptions of new and remarkable fossils from the Paleozoic rocks of the Mississippi Valley.

Ill. State Mus. Nat. Hist., Bull., No. 8, pp. 1-65, pls. i-v, 1896.

The fossils described are mainly from the Carboniferous formation.

509 —— New species of crinoids from Illinois and other States.

Ill. State Mus. Nat. Hist., Bull., No. 9, pp. 1-66, pls. i-v, 1896.

Describes crinoids from the Carboniferous series and two from the Upper Silurian of the Mississippi Valley.

510 —— New species of Echinodermata and a new crustacean from the Paleozoic rocks.

Ill. State Mus. Nat. Hist., Bull., No. 10, 91 pp., 5 pls., 1896.

The fossils described are mainly from the Burlington group of Missouri, Iowa, and Illinois.

511 —— New species of Paleozoic invertebrata from Illinois and other States.

Ill. State Mus. Nat. Hist., Bull., No. 11, 50 pp., 5 pls., 1896.

The fossils described are mainly from the Carboniferous of Illinois and Missouri.

512 **Miller** (W. G.) and **Brock** (R. W.). Some dikes cutting the Laurentian system, counties of Frontenac, Leeds, and Lanark, Ont.

Can. Rec. Sci., vol. vi, pp. 481-488, pl. iii, 1896.

Describes petrographic characters of basic dike rocks.

513 **Mitchell** (James A.). The discovery of fossil tracks in the Newark system (Juratrias) of Frederick County, Md.

Johns Hopkins Univ. Circ., vol. xv, pp. 15-16, 1895.

Describes the distribution of the Juratrias in Maryland and the occurrence of the fossil tracks.

514 **Moore** (Charles J.) [Geology of Cripple Creek district, Colorado.]

In discussion of paper by Whitman Cross on the same subject. See No. 150.

515 **Morris** (Charles). Life before fossils.

Am. Nat., vol. xxx, pp. 188-194 and 279-285, 1896.

Discusses the probable occurrence of life prior to the earliest known fossils.

N.

516 **Nason** (Frank L.). The auriferous gravels of the Upper Columbia River [British Columbia].

Eng. and Mg. Jour., vol. lxi, pp. 279-280, 1896.

Describes the auriferous gravels in this region.

517 —— **Winslow** (Arthur), **Haworth** (E.), and. A report on the Iron Mountain sheet, including portions of Iron, St. Francois, and Madison counties [Missouri].

See Winslow (A.), Haworth (E.), and Nason (F. L), No. 769.

518 **Neill** (James W.). Camp Floyd district, Utah.

Eng. and Mg. Jour., vol. lxi, pp. 85-86, 1896.

Describes the geologic features of the region and the occurrence of the gold ores.

519 **Newberry** (John Strong). The flora of the Amboy clays. A posthumous work edited by Arthur Hollick.

U. S. Geol. Surv., Mon. xxvi, 256 pp., 58 pls., 1896.

Includes a discussion of the botanical characters and geographical distribution of the flora and descriptions of species.

520 **Nicol** (W.). Anhydrite in Ontario.

Can. Rec. Sci., vol. vii, p. 61, 1896.

Describes mineralogic characters of a specimen and gives its chemical analysis.

521 **Nitze** (H. B. C.). North Carolina monazite.

Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 40-43, 1896.

Gives a brief description of the character and distribution of monazite.

522 —— and **Wilkens** (H. A. J.). The present condition of gold mining in the southern Appalachian States.

Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 661-796 and 1021 and 1025, figs. 1-28, 1896.

Describes the geographic and geologic distribution of the gold belts and gives an account of the mining industry of the several States, and a description of the mining, milling, and metallurgical methods.

523 **Norton** (William Harmon). Variation in the position of the nodes on the axial segments of pygdium of a species of Encrinurus.

Iowa Acad. Sci., Proc., vol. iii, pp. 79-81, 1896.

Describes Encrinurus punctatus, and gives a table showing the number of axial annulations in 43 specimens from the Niagara strata in Iowa.

O.

524 **Ordonez** (Ezequiel). Las rocas eruptivas del Suroeste de la cuenca de Mexico.

Institute geologico de Mexico, Bull. No. 2, 46 pp., 1895.

Describes the general character of the valley of Mexico, the occurrence of the igneous rocks, the character of the volcanoes of Santa Catarina and of the Sierra de la Cruces, with a discussion of their petrographic characters.

525 **Ortmann** (Arnold E.). An examination of the arguments by Neumayr for the existence of climatic zones in Jurassic times.

Am. Jour. Sci., 4th ser., vol. i, pp. 257-270, 1896.

Reviews the paleontologic and geologic evidences considered by Neumayr to indicate the existence of climatic zones in Jurassic time.

526 —— On separation, and its bearing on geology and zoogeography.

Am. Jour. Sci., 4th ser., vol. ii, pp. 63-69, 1896.

Discusses the causes of separation or isolation of animals and the evidences of its being a particular factor in the differentiation of species.

527 **Osborn** (Henry Fairchild). The cranial evolution of Titanotherium.

Am. Mus. Nat. Hist., Bull., vol. viii, pp. 157-198, pls. iii-iv, figs. 1-13, 1896.

Discusses the evolution of the titanotheres of the White River beds and describes a number of species.

P.

528 **Patton** (Horace B.). Concretions of chalcedony and opal in obsidian and rhyolite in Colorado.

Read before the Colorado Scientific Society, in Golden, Colo., Nov. 4, 1895, 6 pp., 2 pls.

Describes the occurrence of the concretions and their megascopic and microscopic characters.

529 —— Peculiar geological formations at the head waters of the Rio Grande, Colorado.

Read before the Colorado Scientific Society, in Golden, Colo., Nov. 4, 1895, 2 pp., 2 pls.

Describes erosion forms of volcanic conglomerates.

530 **Peale** (A. C.). Three Forks folio, Montana.

U. S. Geol. Surv., Geol. Atlas of U. S., folio No. 24, 1896.

Describes the physiography and geologic history of the region, the character and distribution of Archean, Algonkian, Cambrian, Devonian, Carboniferous, Juratrias, Cretaceous, Tertiary, Pleistocene, and igneous rocks. Includes a discussion of the geologic structure, the economic features, and topographic, geologic, economic, and structure section maps, and a sheet of columnar sections.

531 **Pearce** (Richard). The mode of occurrence of gold in the ores of the Cripple Creek district [Colorado].

Read before the Colorado Scientific Society, in Denver, Colo., Jan. 8, 1894, 8 pp.

Describes the characters of the ores and discusses briefly their origin.

532 —— Further notes on Cripple Creek ores [Colorado].

Read before the Colorado Scientific Society, in Denver, Colo., April 5, 1894, 7 pp., 1 pl.

Gives additional results of the author's study of these ores.

533 —— Some notes on the occurrence of uraninite in Colorado.

Read before the Colorado Scientific Society, in Denver, Colo., Sept. 9, 1895, 3 pp.

534 —— Notes on the occurrence of a rich silver and gold mineral containing tellurium, in the Griffith lode, near Georgetown, Clear Creek County, Colo.

Read before the Colorado Scientific Society, in Denver, Colo., Oct. 5, 1896, 2 pp.

Describes the characters of the mineral and gives its chemical composition.

535 —— Notes on the occurrence of tellurium in an oxidized form in Montana.

Read before the Colorado Scientific Society, in Denver, Colo., Nov. 2, 1896, 2 pp.

Describes the chemical characters of the material.

536 **Pechin** (Edmund C.). The Oriskany ores at Rich Patch mines, Va.

Eng. and Mg. Jour., vol. lxi, pp. 113, 134 and 159–160, 1896.

Describes the geologic occurrence of the brown hematite ores and the extent of the mining developments.

537 **Peckham** (S. F.). What is bitumen?

Sci. Amer. Suppl., vol. xli, pp. 17071–17072, and 17083–17084, 1896.

Describes the character of bitumen and allied substances and their occurrence in various parts of the world.

538 **Penfield** (S. L.). On pearceite, a sulpharsenite of silver, and on the crystallization of polybasite.

Am. Jour. Sci., 4th ser., vol. ii, pp. 17–29, 1896.

Discusses the relations of the sulphantimonites and sulpharsenites of silver. Proposes the name pearceite for the sulpharsenite species, and describes the chemical composition and crystallization of material from the Drumlummon mine, Montana. Describes the crystallization of polybasite from Colorado, and discusses the relations of pearceite and polybasite to each other and to other minerals.

539 **Penfield** (S. L.) and **Forbes** (E. H.). Fayalite from Rockport, Mass., and on the optical properties of the chrysolite-fayalite group and of monticellite.

Am. Jour. Sci., 4th ser., vol. i, pp. 129–135, 1896.

Describes the occurrence and mineralogic and chemical characters of fayalite, hortonolite, and monticellite, and the optical properties of chrysolite.

540 —— and **Pratt** (J. H.). On the occurrence of thaumasite at West Paterson, N. J.

Am. Jour. Sci., 4th ser., vol. i, pp. 229–233, 1896.

Reviews previous descriptions of this mineral and discusses the chemical and mineralogic characters of material from New Jersey.

541 **Penhale** (Matthew.). Chrome ore in Quebec.

Mineral Industry, 1895, pp. 92–93, 1896.

542 **Penhallow** (D. P.). Nematophyton crassum.

Can. Rec. Sci., vol. vii, pp. 151–156, pl. ii, 1896.

Describes this species from Upper Silurian strata of New York.

543 **Penrose** (R. A. F., jr.). The ore deposits of Cripple Creek, Colo.

Read before the Colorado Scientific Society, in Denver, Colo., June 4, 1894, 5 pp.

Describes the occurrence and character of the gold ores.

544 **Perrine** (Charles D.). Earthquakes in California in 1895.

U. S. Geol. Surv., Bull., No. 147, 22 pp., 1896.

Gives a chronologic record of earthquakes occurring in California in 1895.

545 **Pilsbry** (Henry A.). Pleurotomaria crotaloides Morton in the New Jersey Cretaceous.

Phil. Acad. Nat. Sci., Proc., 1896, pp. 10–11, pl. 1, 1896.

546 —— Geology of the Mussel-bearing clays of Fish House, N. J.

Phil. Acad. Nat. Sci., Proc., 1896, pp. 567–570, 1896.

Describes the lithologic characters and paleontology of the beds and discusses the evidences of their Pleistocene age.

547 **Pirsson** (Louis V.). On the monchiquites or analcite group of igneous rocks.

Jour. of Geol., vol. iv, pp. 679–690, 1896.

Describes the petrographic and chemical characters of monchiquites from Montana.

548 —— A needed term in petrography.

Abstract: Geol. Soc. Am., Bull., vol. vii, pp. 492–493, 1896.

Discusses the use of the term anhedron for those "indeterminate forms without crystal planes in which minerals occur, especially in igneous rocks."

549 —— **Weed** (W. H.) and. Geology of Castle Mountain mining district, Montana.

See Weed (W. H.) and Pirsson (L. V.), No. 723.

549*a* **Pirsson** (Louis V.), **Weed** (W. H.) and. The Bearpaw Mountains, Montana.

See Weed (W. H.) and Pirsson (L. V.), Nos. 724, 725.

549*b* —— Missourite, a new leucite rock from the Highwood Mountains of Montana.

See Weed (W. H.) and Pirsson (L. V.), No. 726.

549*c* —— The geology of the Little Rocky Mountains [Montana].

See Weed (W. H.) and Pirsson (L. V.), No. 727.

550 **Porter** (J. A.). The Smuggler-Union mines, Telluride, Colo.

Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. 449–459, figs. 1–2, 1896.

Describes the occurrence and character of the gold and silver ores in these mines.

551 —— The Smuggler-Union mines, Telluride, Colo.

Abstract: Mining and Scientific Press, vol. lxxiii, p. 461, 1896.

Describes the geology of the region and the character and occurrence of the gold ores.

552 **Powell** (J. W.). James Dwight Dana.

Science, new ser., vol. iii, pp. 181–185, 1896.

Gives a sketch of Professor Dana's work as a scientific investigator.

553 **Pratt** (J. H.). On northupite, pirssonite, a new mineral, gaylussite and hanksite from Borax Lake, San Bernardino County, Cal.

Am. Jour. Sci., 4th ser., vol. ii, pp. 123–135, 1896.

Describes the occurrence and chemical and crystallographic characters of the minerals named.

554 —— **Penfield** (S. L.) and. On the occurrence of thaumasite at West Paterson, N. J.

See Penfield (S. L.) and Pratt (J. H.), No. 540.

555 **Prest** (W. H.). Glacial succession in central Lunenburg, N. S.

N. S. Inst. Sci., Proc. and Trans., 2d ser., vol. ii, pp. 158–170, 1896.

Describes the glacial deposits of the region, and gives the author's views of the succession of glacial phenomena.

556 **Price** (John M., jr.). Rock exposures about Atchison [Kansas].

Kans. Acad. Sci., Trans., vol. xiv, pp. 218–219, 1896.

Describes the rock exposures in the vicinity of Atchison, and gives a vertical section showing the thickness and character of the strata.

557 **Prosser** (Charles S.). [Review of "A preliminary report on the geology of South Dakota," by J. E. Todd.]

Science, new ser., vol. iii, pp. 368–369, 1896.

558 —— [Review of "Report on field work in Chenango County, New York," by J. M. Clarke.]

Science, new ser., vol. iii, pp. 525–526, 1896.

559 —— [Review of "The University Geological Survey of Kansas, Vol. I."]

Science, new ser., vol. iv, pp. 81–83, 1896.

560 **Purdue** (A. H.). [Review of "Sketch of the geology of the San Francisco peninsula," by Andrew C. Lawson.]
Jour. of Geol., vol. iv, pp. 640–644, 1896.

561 **Pynchon** (W. H. C.). The great falls of the Mohawk at Cohoes, N. Y.
Abstract: Am. Assoc. Adv. Sci., Proc., vol. xliv, p. 138 (¼ p.), 1896.

Q.

562 **Quille** (Dan de). The geological age of gold.
Eng. and Mg. Jour., vol. lxii, p. 54, 1896.
Discusses the age of gold deposits in various parts of the United States.

R.

563 **Ramsay** (George S.). The northeastern bituminous Coal Measures of the Appalachian system.
Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 76–83, 1896.
Describes the character and distribution of the Coal Measure rocks and the occurrence of coal seams in Pennsylvania, West Virginia, and Ohio.

564 **Rand** (Thomas D.). The serpentines of eastern Pennsylvania.
Phil. Acad. Nat. Sci., Proc., 1896, p. 219 (¼ p.), 1896.
Brief note on the occurrence of serpentine.

565 **Ransome** (F. Leslie). The great valley of California. A criticism of the theory of isostasy.
Univ. of Cal., Dept. of Geol., Bull., vol. i, pp, 371–428, 1896.
Describes the great valley and its geologic evolution, and discusses the theory of isostasy as applied to other regions of elevation and subsidence.

566 —— [Review of "The Neocene stratigraphy of the Santa Cruz Mountains of California," by George H. Ashley.]
Am. Geol., vol. xvii, pp. 331–335, 1896.

567 **Raymond** (R. W.). [The distinction between schistosity and original bedding in crystalline schists.]
Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 1020–1021, 1896.
In discussion of paper by H. B. C. Nitze and H. A. J. Wilkins on "The present condition of gold mining in the southern Appalachian States."

568 —— The monazite districts of North and South Carolina.
Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 1036–1038 and 1039–1040, 1896.
Discusses the use of the term augen-gneiss by C. A. Mezger in a paper on the same subject. See No. 505.

569 **Reid** (Harry Fielding.). Glacier Bay and its glaciers [Alaska].
U. S. Geol. Surv., 17th Ann. Rept., pt. 1, pp. 421–461, pls. lxxxvi–xcvi, 1896.
Describes the glacial features of Glacial Bay and is vicinity, Alaska.

570 **Reid** (Harry Fielding). Notes on glaciers.

Abstract: Geol. Soc. Am., Bull., vol. vii, p. 508 (⅓ p.), 1896.

Brief remarks on the movements of existing glaciers in western North America.

571 —— The mechanics of glaciers. I.

Jour. of Geol., vol. iv, pp. 912-928, 1896.

Discusses the flow, stratification, form of surface, and variations of glaciers.

572 —— Variations of glaciers.

Science, new ser., vol. iii, p. 867, 1896.

Discusses methods of observing glacial phenomena.

573 —— The flow of glaciers.

Johns Hopkins Univ. Circ., vol. xv, pp. 90-91 (½ p.), 1896.

Gives a brief summary of conclusions.

574 **Rickard** (T. A.). Vein walls.

Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. 193-241, 33 figs.; Mining and Scientific Press, vol. lxxii, pp. 152, 172, 194, and 216-217, 1896.

Describes and illustrates the phenomena of vein walls in different mines and discusses the formation of ore bodies.

575 —— Enterprise mine, Rico, Colo.

Am. Inst. Mg. Engrs., Trans, vol. xxvi, 75 pp., 46 figs., 1896.

Describes the occurrence of the gold and silver ores and the character and structure of the vein system.

576 —— [Geology of the Cripple Creek district of Colorado.]

In discussion of paper by Whitman Cross on the same subject. See No. 150.

577 —— The Cripple Creek gold field [Colorado].

Mining and Scientific Press, vol. lxxii, pp. 284-285, 1896.

Describes the general geologic features of the region and the occurrence of the gold ores.

578 **Ries** (Heinrich). The limestone quarries of eastern New York, western Vermont, Massachusetts, and Connecticut.

U. S. Geol. Surv., 17th Ann. Rept., Pt. III (cont.), pp. 795-811, 1896.

Describes local details of Cambrian and Silurian limestones in the States named and gives a number of chemical analyses.

579 —— The monoclinic pyroxenes of New York State.

N. Y. Acad. of Sci., Annals, vol. ix, pp. 124-180, pls. xiii-xvi, 1896.

Presents a bibliography of the subject, describes the crystallographic, optical, and chemical characters of the pyroxenes and discusses the genesis of New York pyroxenes.

580 —— **Luquer** (Lea McI.) and. The "Augen"-gneiss area, pegmatite veins, and diorite rocks at Bedford, N. Y.

See Luquer (Lea McI.) and Ries (H.), No. 456.

581 **Riggs** (Elmer S.). A new species of Dinictis from the White River Miocene of Wyoming.

Kans. Univ. Quart., vol. iv, pp. 237–241, fig. 1, 1896.

Describes and figures the skull of Dinictis paucidens and compares it with other species of Dinictis.

582 **Roberts** (D. E.). Note on the Cretaceous formations of the eastern shore of Maryland.

Johns Hopkins Univ. Circ., vol. xv, pp. 16–17, 1896.

Gives lists of fossils found at various localities.

583 **Roeth** (A. J.). The lead and zinc fields of Wisconsin.

Eng. and Mg. Jour. vol. lxi, pp. 88–89, 1896.

Describes briefly the occurrence of lead and zinc in Wisconsin.

584 **Rominger** (C.). Geological report on the Upper Peninsula of Michigan, exhibiting the progress of work from 1881 to 1884. Iron and copper regions.

Mich. Geol. Surv., vol. v, Pt. I, pp. 1–179, with map and geologic cross sections, 1895.

Describes the character and distribution of the granitic and dioritic rocks, the lithologic character, succession, and structure of the iron ore and Keweenawan groups. Includes descriptions of some of the iron and copper mines.

585 **Ruedmann** (R.). Note on the discovery of a sessile Conularia—Article I.

Am. Geol., vol. xvii, pp. 158–165, pls. viii–ix, 1896.

Describes material from the Utica shales and discusses the evidence indicating that the Conulariæ, with their cuneiform appendages and similar bodies attached to Trochonema, belong together.

586 —— Note on the discovery of a sessile Conularia—Article II.

Am. Geol., vol. xviii, pp. 65–71, pl. ii, 1896.

Describes and figures the basal appendage of a Conularia gracilis.

587 **Russell** (Israel C.). Igneous intrusions in the neighborhood of the Black Hills of Dakota.

Jour. of Geol., vol. iv, pp. 23–43, pls. i–iii, 1896.

Describes an occurrence of igneous intrusions in sedimentary rocks, differing in form from either laccolites or volcanic rocks. Gives a detailed description of the several igneous masses.

588 —— On the nature of igneous intrusions.

Jour. of Geol., vol. iv, pp. 177–194, 1896.

Describes the different forms of igneous intrusions as shown by intruded sheets, laccolites, plutonic plugs, and great dome-shaped uplifts, and discusses their origin.

S.

589 **Safford** (James M.). A new and important source of phosphate rock in Tennessee.

Am. Geol., vol. xviii, pp. 261–264, 1896.

Describes the occurrence of the phosphate material and the character of the Trenton formation in which it is found, and gives its chemical analysis.

590 **Salisbury** (Rollin D.). Surface Geology—Report of Progress, 1895 [New Jersey].

N. J. Geol. Surv., Ann. Rept. for 1895, pp. 3-16, pls. i-iii, 1896.

Describes the occurrence and character of the Miocene, Pensauken, and Jamesburg formations in certain portions of the State. Presents a map showing the distribution of the Pensauken formation in New Jersey.

591 —— The Philadelphia brick clays et al.

Science, new ser., vol. iii, pp. 480-481, 1896.

Discusses briefly the evidence as to the age of these clays, forming a part of the Columbia formation.

592 —— Loess in the Wisconsin drift formation.

Jour. of Geol., vol. iv, pp. 929-937, 1896.

Describes the characters and relations of the loess and drift beds in Wisconsin.

593 —— Stratified drift.

Jour. of Geol., vol. iv, pp. 948-970, 1896.

Describes the origin and formation of stratified drift deposits and discusses their relations to unstratified drift beds.

594 **S[alisbury]** (R. D.). [Review of "Physical features of Missouri," by C. F. Marbut.]

Jour. of Geol., vol. iv, pp. 877-878, 1896.

595 **Salisbury** (Rollin D.). Volcanic ash in southwestern Nebraska.

Science, new ser., vol. iv, pp. 816-817, 1896.

Describes volcanic ash beds near Ingham and Orleans, Nebr.

596 **Sapper** (Carlos). Geology of Chiapas, Tabasco, and the peninsula of Yucatan. Translated by C. Joaquina Maury and G. D. Harris.

Jour. of Geol., vol. iv, pp. 938-947, 1896.

Describes the distribution of the Carboniferous, Cretaceous, and Tertiary formations and crystalline rocks, and gives a list of Pliocene fossils collected by Professor Heilprin.

597 —— Sobre la geografia fisica y la Geologia de la peninsula de Yucatan.

Instituto geologico de Mexico, Bull. No. 2, 57 pp., 1896.

Describes the character and distribution of the igneous, Cretaceous, Tertiary, and Pleistocene rocks of the regions. Includes a geologic map and cross section.

598 **Sardeson** (F. W.). The Galena and Maquoketa series.

Am. Geol. vol. xviii, pp. 356-368, 1896.

Defines the terms Galena and Maquoketa series, and gives tables of synonymy by each division and classification by authors generally.

599 **Say** (Thomas). A reprint of the paleontological writings of Thomas Say, with an introduction by G. D. Harris.

Am. Pal., Bull., vol. i, No. 5, 103 pp., pls. vii-xiii, 1896.

Comprises a republication of the following papers: Fossil zoology, two papers; Fossil shells found in a shell mass from Anastasia Island; An account of some of the fossil shells of Maryland; and Crinoidea.

600 **Schmitz** (E. J.). A section of Rich Patch Mountain at Iron Gate, Va.

Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 477–481, 1896.

Presents a cross section of the mountain and gives the author's notes on the character and succession of the strata found in the several tunnels, of Devonian and Silurian age.

601 —— Copper ores in the Permian of Texas.

Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. 97–108, 1896.

Describes the stratigraphic and lithologic features of the district and the occurrence and character of the ore bodies.

602 —— The oil boom of Tennessee.

Eng. and Mg. Jour., vol. lxi, pp. 228–229, with map, 1896.

Gives two sections of artesian wells in this region.

603 **Schuchert** (Charles). Report on Paleozoic fossils from Alaska.

U. S. Geol. Surv., 17th Ann. Rept., Pt. I, pp. 898–906, 1896.

Gives a historical sketch of the collections of Paleozoic fossils and describes the relations and distribution of certain Devonian and Carboniferous forms. Includes a list of papers treating of Alaska Paleozoic fossils.

604 **Schweinitz** (E. A. de). A meteorite from Forsyth County, N. C.

Am. Jour. Sci., 4th ser., vol. i, pp. 208–209, figs. 1–4, 1896.

Gives a brief description of the occurrence of this meteorite and its chemical composition.

605 **Scott** (W. B.). A question of priority.

Am. Geol., vol. xvii, p. 58 (correspondence), 1896.

Refers to a previous paper by W. F. Cummins concerning the use of the term "Goodnight beds" and to the association of certain faunas in the Loop Fork beds of Texas and Kansas.

606 —— Paleontology as a morphological discipline.

Science, new ser., vol. iv, pp. 177–188, 1896.

Discusses some of the principles of paleontology and their relations to morphological investigations.

607 **Scudder** (Samuel H.). A caddis fly from the Leda clays of the vicinity of Ottawa, Canada.

Can. Rec. Sci., vol. vi, pp. 276–277, 1895.

Describes Phryganea ejecta n. sp.

608 **Seeley** (Henry M.), **Brainerd** (Ezra) and. The Chazy of Lake Champlain [New York].

See Brainerd (E.) and Seeley (H. M.), No. 69.

609 **Shaler** (N. S.). Conditions and effects of the expulsion of gases from the earth.

Boston Soc. Nat. Hist., Proc., vol. xxvii, pp. 89–106, 1896.

Discusses the phenomena of expulsion of gases in earthquakes, volcanic eruptions, and in artesian wells.

610 **Shaler** (N. S.). The share of volcanic dust and pumice in marine deposits.

Abstract: Geol. Soc. Am., Bull., vol. vii, pp. 490-492, 1896.

Discusses the amount and distribution of these materials in marine deposits.

611 —— The economic aspect of soil erosion.

Nat. Geog. Mag., vol. vii, pp. 328-338, 1896.

Describes the process of erosion.

612 —— **Woodworth** (J. B.), and **Marbut** (C. F.). The Glacial brick clays of Rhode Island and southeastern Massachusetts.

U. S. Geol. Surv., 17th Ann. Rept., Pt. I, pp. 957-1004, pls. lxi-lxii, figs. 34-43, 1896.

Describes the origin and character of the clays, their geographical distribution, correlation, and the general features of the clays about Boston.

613 **Shattuck** (George Burbank). Preliminary discussion of the geology of the Bordentown sheet [New Jersey] of the geologic atlas of the United States.

Johns Hopkins Univ. Circ., vol. xv, pp. 14-15, 1895.

Describes the character and distribution of the Pleistocene, Tertiary, and Cretaceous beds of the region.

614 **Shephard** (James H.). The artesian waters of South Dakota.

U. S. Exp. Stat., South Dakota, Bull. 41, 76 pp., 1894.

Gives sections of the wells and chemical analyses of the waters.

615 —— The shallow artesian wells of South Dakota.

U. S. Exp. Stat., South Dakota, Bull. No. 49, 24 pp., 1896.

Describes the occurrence of artesian waters and gives chemical analyses.

616 **Sherborn** (Charles Davies). An index to the genera and species of the Foraminifera.

Smith. Inst., Miscl. Coll., No. 1031, Part II, non to z, 1896.

617 **Shimek** (B.). A theory of the loess.

Iowa Acad. Sci., Proc., vol. iii, pp. 82-89, 1896.

Discusses the origin of the loess of the Mississippi Valley.

618 **Simonds** (Frederic W.). Floating sand: an unusual mode of river transportation.

Am. Geol., vol. xvii, pp. 29-37, 1896.

Describes the phenomena of floating sand on the Llano River in Texas and discusses its cause.

619 —— Floating sand: an unusual mode of river transportation.

Sci. Amer. Suppl., vol. xli, pp. 16745-16746, 1896.

620 **Simpson** (Charles T.). Description of four new Triassic Unios from the Staked Plains of Texas.

U. S. Nat. Mus., Proc., vol. xviii, pp. 381-385, 1896.

621 **Skewes** (Edward). The ore shoots of Cripple Creek [Colorado].
Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. 553-579, 1896.
Describes the occurrence of the ore shoots and their structural features.

622 **Slosson** (Edwin E.). The analysis of the Salt Creek petroleum [Wyoming].
Wyoming Univ., School of Mines, Petroleum ser., Bull. No. 1, pp. 23-47, 1896.
Describes the chemical character and composition of the petroleum.

623 **Smith** (Eugene A.). Supplementary notes on the most important varieties of the metamorphic or crystalline rocks of Alabama: Their composition, distribution, structure, and microscopic characters.
Ala. Geol. Surv., Bull. No. 5, pp. 108-130, 1896.
Describes the distribution and general characters of the metamorphic or crystalline rocks and the occurrence of gold.

624 —— The phosphates and marls of Alabama.
Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 811-822, 1896.
Describes the general relations of the Cretaceous and Tertiary rocks of Alabama and the geographic distribution of phosphates and marls in these beds.

625 —— Notes on native sulphur in Texas.
Science, new ser., vol. iii, pp. 657-659, 1896.
Describes the occurrence of sulphur in the Guadalupe Mountains and discusses the origin of the deposits.

626 **Smith** (Frank Clemes). The occurrence and behavior of tellurium in gold ores, more particularly with reference to the Potsdam ores of the Black Hills, South Dakota.
Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. 485-515, figs. 11, 1896.
Gives analyses of the ores, a description of the action of tellurium as a mineralizing agent and of the microscopic characters of the associated rocks.

627 **Smith** (George Otis). The volcanic series of the Fox Islands, Maine.
Johns Hopkins Univ. Circ., vol. xv, pp. 12-13, 1895.
Describes the petrographic characters of the rocks, including porphyrites and spherulites.

628 **Smith** (James Perrin). Marine fossils from the Coal Measures of Arkansas.
Am. Phil. Soc., Proc., vol. xxxv, pp. 214-285, pls. xvi-xxiv, 1896.
Gives lists of fossils from localities in Arkansas, describes briefly the lithologic characters of the Coal Measures and compares them with Coal Measure formations of other countries and with the Pacific Carboniferous. Discusses the classification and correlation of the Arkansas Coal Measures and gives a correlation table and notes on the marine fossils.

629 **Smith** (James Perrin). Classification of the marine Trias.

Jour. of Geol., vol. iv, pp. 385-398, 1896.

Gives a description of the geographic distribution of the Trias and table showing the classification of marine Trias sediments. Describes the distribution of the various subdivisions and mentions some of the characteristic fossils.

630 —— Supplementary notes on the metamorphic series of the Shasta region of California.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xliv, pp. 137-138, 1896.

Brief remarks on the fauna of these beds.

631 **Smock** (John C.). See Merrill (F. J. H.), No. 495.

632 **Smyth** (B. B.). The Topeka coal hole [Kansas].

Kans. Acad. Sci., Trans., vol. xiv, pp. 207-215, 1896.

Gives the section of the hole to a depth of 1,638 feet.

633 —— The terminal bowlder belt in Shawnee County [Kansas].

Kans. Acad. Sci., Trans., vol. xiv, pp. 220-226, with map of the terminal moraine, 1896.

Describes the glacial phenomena of the region and discusses the causes of the Ice age.

634 **Smyth** (C. H., jr.). Metamorphism of gabbro in St. Lawrence County, N. Y.

Am. Jour. Sci., 4th ser., vol. i, pp. 273-281, 1896.

Describes the occurrence, secondary metamorphism and petrographic characters of this rock.

635 —— Note on recently discovered dikes of alnoite at Manheim, N. Y.

Am. Jour. Sci., 4th ser., vol. ii, pp. 290-292, 1896.

Describes the occurrence of alnoite and the petrographic characters of the dike rocks.

636 —— The genetic relations of certain minerals of northern New York.

N. Y. Acad. Sci., Trans., vol. xv, pp. 260-270, 1896.

Describes the occurrence of certain minerals and discusses the evidences of their genesis.

637 —— The genesis of the talc deposits of St. Lawrence County, N. Y.

School of Mines Quart., vol. xvii, pp. 333-341, 1896.

Discusses the relations of the gneiss and limestones of the region and the origin of the talc.

638 —— Fibrous talc and soapstone.

Mineral Industry, 1895, pp. 37-42, 1896.

Describes the occurrence of talc in the Adirondack region of New York.

639 **Smyth** (Henry Lloyd). Magnetic observations in geological mapping.

Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. 640-709, 27 figs., 1896.

Describes the magnetic rock of the Lower Huronian series in the Upper Peninsula of Michigan, and the instruments and methods of work. Gives the results of tracing magnetic rocks by the disturbances produced in the instruments.

640 —— and **Finlay** (J. Ralph). The geological structure of the western part of the Vermilion range, Minnesota.

Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 595-645, figs. 1-11, 1896.

Reviews the literature on this region, describes the character, relations, and distribution of the sedimentary and igneous rocks, and discusses the geologic structure, the origin of the conglomerate breccias, and the general features of the ore deposits.

641 **Spencer** (Arthur C.). A preliminary note on the geology of Massanutten Mountain in Virginia.

Johns Hopkins Univ. Circ., vol. xv, pp. 13-14, 1895.

Describes the deformation of the region and the character of the Silurian strata.

642 **Spencer** (J. W.). Geographical evolution of Cuba.

Geol. Soc. Am., Bull., vol. vii, pp. 67-94, figs. 1-13, 1896.

Describes the topography, hydrography, igneous and metamorphic rocks, and the history of the Cretaceous, Tertiary, and Pleistocene formations. Gives an account of the occurrence of terraces, sea caves, and modern coralline limestones or reefs, and a table showing the geologic succession in Cuba.

643 —— Geological canals between the Atlantic and Pacific oceans.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xliv, p. 139 (½ p.), 1896.

Brief statement regarding the occurrence of such phenomena on the Isthmus of Tehauntepec, Mexico.

644 —— Recent elevation of New England.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xliv, pp. 139-140 (½ p.), 1896.

Discusses the origin of the terraces of the valleys of New England.

645 —— Niagara as a timepiece.

Pop. Sci. Mo., vol. xlix, pp. 1-19, figs. 1-17, 1896.

Describes the geologic history and erosion of Niagara River.

646 —— How the Great Lakes were built.

Pop. Sci. Mo., vol. xlix, pp. 157-172, figs. 1-15, 1896.

Describes the geologic history of the Great Lakes region.

647 **Stanton** (Timothy W.). The faunal relations of the Eocene and Upper Cretaceous on the Pacific Coast.

U. S. Geol. Surv., 17th Ann. Rept., Pt. I, pp. 1011-1048, pls. lxiii-lxvii, 1896.

Gives an account of the local features and stratigraphy of the formations and describes some Lower Tejon species.

648 **Stanton** (Timothy W.). Contributions to the Cretaceous paleontology of the PacificCoast: The fauna of the Knoxville beds.

U. S. Geol. Surv., Bull., No. 133, 132 pp., 20 pls., 1896.

Describes the distribution, succession, and lithologic character of the Knoxville beds and discusses the relations of their fauna with other faunas and the age of the beds. Includes descriptions of new species.

649 —— and **Vaughan** (T. Wayland). Section of the Cretaceous at El Paso, Tex.

Am. Jour. Sci., 4th ser., vol. i, pp. 21-26, 1896.

Gives a columnar section of the Cretaceous strata and lists of fossils collected from the various beds.

650 **Stevenson** (John J.). Notes on the geology of Indian Territory.

N. Y. Acad. Sci., Trans., vol. xv, pp. 50-61, 1896.

Quotes Winslow's unpublished table of the succession of the Coal Measures in Arkansas, and describes their character and distribution in Indian Territory. Reviews recent work in the region and discusses its geologic structure.

651 —— The Cerillos coal fields near Santa Fe, N. Mex.

N. Y. Acad. Sci., Trans., vol. xv, pp. 105-122, 1896.

Describes the character of the eruptive rocks and Cretaceous deposits, and the occurrence and chemical composition of the coals. Discusses the cause of the metamorphism of the coal.

652 —— The Cerillos coal field of New Mexico.

Abstract: Geol. Soc. Am., Bull., vol. vii, pp. 525-527; Science, new ser., vol. iii, pp. 392-394, 1896.

Describes the Laramie rocks in which the coal occurs, the thickness of the coal seams, and discusses the origin of the coal.

653 —— [Review of "A summary description of the geology of Pennsylvania," by J. P. Lesley.]

Science, new ser., vol. iii, pp. 876-877, 1896.

654 **Stewart** (Alban). A geological section at Providence, Mo.

Kans. Univ. Quart., vol. iv, pp. 161-162, 1896.

Describes the lithologic character and paleontology of the section, composed of Carboniferous and Devonian strata.

655 **Strieby** (William). The origin and use of the natural gas at Manitou, Colo.

Colo. College Studies, 5th Ann. Pub., pp. 14-35, 1894.

In discussing the origin of natural gas, describes the geologic structure of the region mentioned.

656 **Swem** (Earl G.). A preliminary report on the glaciated area of Kansas.

Kans. Univ. Quart., vol. iv, pp. 153-159, 1896.

Describes the physiography of the region and gives a vertical section of the Glacial beds.

T.

657 **Taff** (Joseph A.) and **Brooks** (Alfred E.). Buckhannon folio, West Virginia.

U. S. Geol. Surv., Geol. Atlas of the U. S., folio No. 34, 1896.

Describes the physical features of the Appalachian province, the topography and stratigraphy of the quadrangle, the character and distribution of the Devonian and Carboniferous strata, the geologic structure, and the occurrence of coal and building stones. Includes topographic, geologic, and structure section maps.

658 —— **Darton** (N. H.) and. Piedmont folio, West Virginia, Maryland.

See Darton (N. H.) and Taff (J. A.), No. 166.

659 **Tarr** (Ralph S.). A query concerning the origin of atolls.

Nature, vol. liv, p. 101 (½ p.), 1896.

Remarks on the subsidence of Bermuda Islands and discusses the mode of formation of atolls.

660 **Taylor** (Frank B.). Preliminary notes on studies of the Great Lakes made in 1895.

Am. Geol., vol. xvii, pp. 253–257 (correspondence), 1896.

Describes the author's observations on the glacial phenomena in Michigan and on the north shore of Lake Superior.

661 —— The Algonquin and Nipissing beaches.

Am. Geol., vol. xvii, pp. 397–400 (correspondence), 1896.

Discusses the evidences as to the distinctness of these two beaches.

662 —— Notes on the Quaternary geology of the Mattawa and Ottawa valleys [Ontario].

Am. Geol., vol. xviii, pp. 108–120, 1896.

Describes the occurrence of old shore lines in the region.

663 **Thies** (Adolph). Present condition of gold mining in the southern Appalachian States.

Am. Inst. Mg. Engrs., Trans., vol. xxv, pp. 1016–1020, 1896.

In discussion of paper by H. B. C. Nitze and H. A. J. Wilkens on the same subject, remarks on the occurrence of certain clay slates in the Haile mine, S. C., previously called talcose slate.

664 **Tight** (W. G.). A pre-Glacial tributary to Paint Creek and its relation to the Beech flats of Pike County, Ohio.

Dennison Univ., Sci. Lab., Bull., vol. ix, pp. 25–34, pl. xi, 1895.

Describes the drainage, discusses its origin, and presents a map of the region.

665 **Tilton** (J. L.). Geology of Warren County [Iowa].

Iowa Geol. Surv., vol. v, pp. 303–359, pls. vii–x, figs. 44–51, 1896.

Describes the physiography of the county, the lithologic character, distribution, and structure of the Glacial and Carboniferous deposits, and the occurrence of coal, water supply, building stones, and clays. Includes a geologic map of the county.

666 **Tilton** (J. L.) The area of slate near Nashua, N. H.

Iowa Acad. Sci., Proc., vol. iii, pp. 66–71, pl. v, fig. 3, 1896.

Describes the geologic features of the area and the gradations in the slate, schist, and gneiss. Accompanied by geologic map and cross section.

667 —— Notes on the geology of the Boston basin [Massachusetts].

Iowa Acad. Sci., Proc., vol. iii, pp. 72–74, 1896.

Gives a brief statement regarding the geologic work done in this field and a map of the southwestern part of the Boston basin.

668 **Todd** (James Edward). The moraines of the Missouri couteau and their attendant deposits.

U. S. Geol. Surv., Bull. No. 144, 71 pp., 21 pls., 1896.

Describes the moraines in North and South Dakota between the Missouri and James rivers and other glacial phenomena. Includes brief notes on the Fox Hills and Pierre formations of the region.

669 —— Formation of the Quaternary deposits [Missouri].

Mo. Geol. Surv., vol. ix, pp. 114–217, pls. xii–xxii, figs. 20–21, 1896.

Describes the drift loess and alluvial deposits and gives a summary of the Quaternary history of Missouri.

670 —— The Quaternary geology [Higginsville sheet, Missouri].

Mo. Geol. Surv., vol. ix, sheet rept., No. 1, pp. 54–59, 1896.

Describes the character of the Pleistocene deposits in the area of the Higginsville sheet, Missouri, accompanied by map showing their distribution.

671 —— The Quaternary geology [Bevier sheet, Missouri].

Mo. Geol. Surv., vol. ix, sheet rept., No. 2, pp. 37–47, 1896.

Describes the topography and the character and distribution of the Pleistocene deposits in the area of the Bevier sheet, Missouri.

672 —— Log-like concretions and fossils shores.

Am. Geol., vol. xvii, pp. 347–349, pl. xii, 1896.

Describes the occurrence of log-like concretions in the Laramie formation of South Dakota and discusses their origin.

673 —— [Review of "The formation of the Quaternary deposits of Missouri," by J. C. C.]

Jour. of Geol., vol. iv, p. 976 (¾ p.), 1896.

674 **Tower** (G. W.). Naval erosion.

Science, new ser., vol. iii, pp. 563–564 (½ p.), 1896.

Describes the erosion of stream banks produced by a steamer in the Kennebec River, Maine.

675 **Turner** (H. W.). Further contributions to the geology of the Sierra Nevada.

U. S. Geol. Surv., 17th Ann. Rept., Pt. I, pp. 529–740, pls. xvii–xlvii, figs. 18–22, 1896.

Describes the character and distribution of the igneous and metamorphic rocks, the pre-Cretaceous sedimentaries, and the Cretaceons, Tertiary, and Pleistocene beds in various parts of the Sierra Nevada region. Gives an account of the occurrence of gold and a description of the petrographic and chemical characters of a large number of rock varieties. Discusses the rock classification.

676 **Turner** (H. W.). Notice of some syenitic rocks from California.

Am. Geol., vol. xvii, pp. 375-388; Abstract: Mining and Scientific Press, vol. lxxiii, p. 237, 1896.

Discusses the principles of nomenclature of rocks and describes the characters and chemical composition of syenitic rocks from different parts of California.

677 **Tyrrell** (J. Burr). The genesis of Lake Agassiz.

Jour. of Geol., vol. iv., pp. 811-815, 1896.

Discusses the evidences as to the origin of Lake Agassiz, and describes glacial phenomena of Manitoba.

678 —— Is the land around Hudson Bay at present rising?

Am. Jour. Sci., 4th ser., vol. ii, pp. 200-205, 1896.

Discusses the evidence indicating that the land in this region has reached an almost stable condition.

U.

679 **Udden** (J. A.). An account of the Paleozoic rocks explored by deep borings at Rock Island, Ill., and vicinity.

U. S. Geol. Surv., 17th Ann. Rept., Pt. II. In paper by Frank Leverett on "The Water Resources of Illinois."

Describes the stratigraphic features of the Devonian, Silurian, and Cambrian rocks of the region. Includes sections of the well drillings.

680 **Upham** (Warren). The glacial Lake Agassiz.

U. S. Geol. Surv., Mon. xxv, 658 pp., 38 pls., 35 figs., 1896.

Describes the topography of the lake basin, the character and distribution of the Archean, Silurian, Devonian, and Cretaceous beds underlying the drift, and also of the drift deposits. Discusses the history of Lake Agassiz, the formation of the beaches and deltas, and of changes of the level of the beaches. Gives an account of the artesian wells of the Red River Valley and of the economic features of the region.

681 —— Drumlins and marginal moraines of ice sheets.

Geol. Soc. Am., Bull., vol. vii, pp. 17-30, 1896.

Refers to the papers in which drumlins in North America are described. Discusses the formation of drumlins and marginal moraines and the growth and decline of the Pleistocene deposition of drift. Compares the present ice action in Alaska and Greenland.

682 —— Pre-Glacial and post-Glacial valleys of the Cuyahoga and Rocky rivers [Ohio].

Geol. Soc. Am., Bull., vol. vii, pp. 327-348, pl. 15, figs. 1-4, 1896.

Describes the extent of the pre-Glacial valleys, the post-Glacial erosion, the drift sections, the beach ridges in Cleveland and the temporary readvance of the ice sheet.

683 —— Physical conditions of the flow of glaciers.

Am. Geol., vol. xvii, pp. 16-29, pl. ii, 1896.

Reviews the theories and discusses the cause of veined or ribboned structure in glaciers and of the flow of glacial molecules and grains.

684 **Upham** (Warren). Sublacustrine till.

Am. Geol., vol. xvii, pp. 371-375, 1896.

Describes the characters and distribution of sublacustrine till in the northern United States and in Canada.

685 —— Beaches of Lakes Warren and Algonquin.

Am. Geol., vol. xvii, pp. 400-402 (correspondence), 1896.

Discusses a paper by F. B. Taylor on "The Algonquin and Nipissing Beaches."

686 —— Origin and age of the Laurentian lakes and of Niagara Falls.

Am. Geol., vol. xviii, pp. 169-177, fig. 1, 1896.

Describes the pre-Glacial condition and the Glacial lakes of the St. Lawrence basin, and discusses the evidences as to the outlets of Lakes Huron, Michigan, and Superior, and the duration of Niagara Falls and the post-Glacial period.

687 —— View of the Ice Age as two epochs. The Glacial and Champlain.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xliv, pp. 140-145, 1896.

Noticed in Bibliography and Index for 1895. No. 494.

688 —— Causes, stages, and time of the Ice Age.

Pop. Sci. Mo., vol. xlix, pp. 354-368, 1896.

Discusses glacial phenomena and presents maps of the glaciated areas of North America and Europe.

V.

689 **Van Diest** (E. C. and P. H.). Notes on the geology of the western slope of the Sangre de Cristo range in Costillo County, Colo.

Read before the Colorado Scientific Society, in Denver, Colo., November 5, 1894, 5 pp.

Describes the Cambrian and Silurian strata and the occurrence of gold and silver ores.

690 **Van Diest** (P. H.). See **Van Diest** (E. C. and P. H.), No. 689.

691 **Van Hise** (Charles Richard). Principles of North American pre-Cambrian geology, with an appendix of flow and fracture of rocks as related to structure, by Leander Miller Hoskins.

U. S. Geol. Surv., 16th Ann. Rept., Pt. I, pp. 581-872, pls. cviii-cxvii, figs. 101-169; Jour. of Geol., vol. iv, pp. 195-213, 312-353, 449-453, and 593-629, figs. 7-17; Am. Jour. Sci., 4th ser., vol. ii, pp. 205-213; Stone, vol. xiv, pp. 26-37, 8 figs., 1896.

Discusses the phenomena of deformation, cleavage and fissility, joints, faults, autoclastic rocks, metamorphism of sedimentary and igneous rocks, and stratigraphic features. Describes the succession and correlation of the Archean and Algonkian rocks in different parts of North America.

692 —— Summary of current pre-Cambrian North American literature.

Jour. of Geol., vol. iv, pp. 362-372, and 744-756, 1896.

693 **Van Hise** (Charles Richard). The relations of primary and secondary structures in rocks.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xliv, pp. 135–136, 1896.

694 —— A central Wisconsin base level.

Science, new ser., vol. iv, pp. 57–59, 1896.

Describes the general features of the base level and discusses its age.

695 —— A northern Michigan base level.

Science, new ser., vol. iv, pp. 217–220, 1896.

Describes a base-leveled region in northern Michigan.

696 **Van Ingen** (D. A.) Petroleum [in New York].

N. S. State Mus., Bull., vol. iii, No. 15, pp. 558–560, 1896.

Describes the occurrence of petroleum at various localities in the State.

697 **Van Ingen** (Gilbert) and **White** (Theodore G.). An account of the summer's work in geology on Lake Champlain.

N. Y. Acad. Sci., Trans., vol. xv, pp. 19–23, 1896.

Describes the character of Ordovician strata near Lake Champlain in New York and Vermont.

698 **Vaughan** (T. Wayland). A brief contribution to the geology and paleontology of northwestern Louisiana.

U. S. Geol. Surv., Bull., No. 142, 65 pp., 4 pls., 1896.

Describes the character and distribution of the Cretaceous, Tertiary, and Pleistocene deposits and of the Sparta sands, a new formation name for deposits of undetermined age. Also proposes the name Cockfield Ferry beds. Gives lists of fossils at various localities and a bibliography of Louisiana paleontology. Describes a number of new species from the Tertiary beds.

699 —— Cœlenterata from the Eocene deposits of Delaware, Maryland, and Virginia.

U. S. Geol. Surv., Bull. No. 141, pp. 89–91, 1896.

Describes four species from these beds.

700 —— Cœlenterata [Eocene fauna of the Middle Atlantic slope].

Johns Hopkins Univ. Circ., vol. xv, p. 61 (½ p.), 1895.

Describes two new species.

701 —— [Review of the "Fossil sponges of the flint nodules in the Lower Cretaceous of Texas," by J. A. Merrill.]

Jour. of Geol., vol. iv, pp. 112–116, 1896.

702 —— **Stanton** (T. W.) and. Section of the Cretaceous at El Paso, Tex.

See Stanton (T. W.) and Vaughan (T. W.), No. 649.

703 **Vogdes** (Anthony W.). A bibliography relating to the geology, paleontology, and mineral resources of California.

Cal. State Mg. Bureau, Bull., No. 10, 121 pp., 1896.

704 **Vogt** (J. H. L.). The formation of eruptive ore deposits.

Mineral Industry, 1895, pp. 743–754, 1896.

Discusses the origin and mode of formation of eruptive ore bodies.

W.

705 **Wadsworth** (M. E.). [Review of "Manual of lithology: Treatment of the principles of the science with special reference to megascopic analysis," by Edward H. Williams, jr.

Science, new ser., vol. iv, pp. 361-363, 1896.

706 **Walcott** (Charles D.). Report of the Director [U. S. Geological Survey] for the fiscal year ending June 30, 1895.

U. S. Geol. Surv., 16th Ann. Rept., Pt. I, pp. 5-130, 1896.

Describes the work of the geologic, topographic, and paleontologic divisions of the United States Geological Survey.

707 —— Report of the Director [U. S. Geological Survey] for the fiscal year ending June 30, 1896.

U. S. Geol. Surv., 17th Ann. Rept., Pt. I, pp. 5-200, 1896.

Describes the work of the geologic, topographic, and paleontologic divisions of the United States Geological Survey, and gives a summary of the results obtained by the different field parties.

708 —— The Cambrian rocks of Pennsylvania.

U. S. Geol. Surv., Bull., No. 134, 43 pp., 15 pls., 1896.

Describes the character and distribution of the Cambrian rocks of Pennsylvania and gives lists of fossils found at various localities.

709 —— Fossil jelly fishes from the Middle Cambrian terrane.

U. S. Nat. Mus., Proc., vol. xviii, pp. 611-614, pls. 31-32, 1896.

Describes two new genera and three new species from the Coosa Valley, Alabama.

710 **Walker** (A. E.). Description of the railway cutting [Ontario].

Hamilton Assoc., Jour. and Proc., No. 12, pp. 147-150, 1896.

Comprises notes on glacial deposits near Hamilton, Ontario.

711 **Walker** (Francis A.). Memoir of William Barton Rogers, 1804-1882.

Nat. Acad. Sci., Biog. Mem., vol. iii, pp. 3-13, 1895.

712 **Walker** (T. L.). Notes on sperrylite.

Am. Jour. Sci., 4th ser., vol. i, pp. 110-112, 1896.

Describes the mineralogic and chemical characters of material from the Vermilion mine, Algoma, Ontario.

713 **Ward** (Lester F.). Some analogies in the Lower Cretaceous of Europe and America.

U. S. Geol. Surv., 16th Ann. Rept., Pt. I, pp. 469-540, pls. xcvii-cvii, figs. 67-69, 1896.

Compares the lithologic and faunal characters of the Potomac and Wealden formations and describes the Scaly clays of Italy and the Jurassic and Cretaceous of Portugal.

714 —— [Review of "The Wealden flora," by A. C. Seward.]

Science, new ser., vol. iii, pp. 869-876, 1896.

715 **Ward** (Lester F.). Age of the Island series.

Science, new ser., vol. iv, pp. 757-760, 1896.

Discusses the age of certain strata of the Atlantic Coastal plain, assigned by Professor Marsh to the Jurassic.

716 **Washington** (Henry S.). The magmatic alteration of hornblende and biotite.

Jour. of Geol., vol. iv, pp. 257-282, 1896.

Reviews the theories concerning the alteration of hornblende and biotite as due to the resorptive action of a magma, describes the conditions under which the phenomena takes place, and discusses the author's proposed hypothesis and the origin of some augite andesites.

717 **Webster** (Clement L.). Notes on the geology of southwestern New Mexico.

Am. Geol., vol. xviii, pp. 56-57 (correspondence), 1896.

Describes the general features of the Carboniferous and Cretaceous formations of the region.

718 **Weed** (Walter Harvey). Sedimentary rocks [Yellowstone National Park folio, Wyoming].

U. S. Geol. Surv., Geol. Atlas of U. S., folio No. 30, 1896.

Describes the character and distribution of the Algonkian, Cambrian, Silurian, Devonian, Carboniferous, Juratrias, Cretaceous, Tertiary, and Pleistocene formations and the hot spring deposits.

719 —— The Fort Union formation.

Am. Geol., vol. xviii, pp. 201-211, 1896.

Reviews the early descriptions of the Fort Union group, and of the Laramie and the Livingston beds, gives two sections of Fort Union strata in Montana, and discusses the differences of the physical and faunal characters of the Laramie and Fort Union beds, and the evidences indicating that the Fort Union, as originally described, includes strata of distinct and separate formations.

720 —— Ore deposits of the Little Rocky Mountains, Montana.

Eng. and Mg. Jour., vol. lxi, pp. 423-424, 1896.

Describes the geologic features of the region and the occurrence and character of the gold ores.

721 —— Mineral resources of the Judith Mountains, Montana.

Eng. and Mg. Jour., vol. lxi, pp. 496-498, 1896.

Describes the geology of the region and the occurrence of gold.

722 —— Notes on the geology of the Neihart mining district, Montana.

Mining, vol. i, pp. 25-29, 1896.

Describes the geologic structure of the region, the character of the igneus rocks, and the occurrence of the precious metals.

723 —— and **Pirsson** (Louis V.). Geology of the Castle Mountain mining district, Montana.

U. S. Geol. Surv., Bull. No. 139, 164 pp., 17 pls., 1896.

Describes the geologic structure, the lithologic character of the Algonkian, Cambrian, Silurian, Devonian, Carboniferous, Juratrias, Cretaceous, and Miocene rocks and the petrographic characters of the igneous rocks. Includes notes on the glacial geology, on the occurrence of the precious metals and copper, and on the minerals collected.

724 **Weed** (Walter Harvey) and **Pirsson** (Louis V.). The Bearpaw Mountains, Montana. [Part I.]

Am. Jour. Sci., 4th ser., vol. i, pp. 283-301 and 351-362, figs. 1-4; vol. ii, pp. 136-148, 1896.

Describes the topography and geology of the region and the character and distribution of the extrusive and intrusive rocks. Describes the petrographic character, and chemical composition of the several rock types of an intrusive igneous mass, differentiated in place, including quartz syenite, yogoite, shonkinite, augite-syenite, trachyte, nepheline basalt, and leucitite. Compares the differentiation at this locality with that at Yogo Peak, Montana.

725 —— Bearpaw Mountains of Montana. [Part II.]

Am. Jour. Sci., 4th ser., vol. ii, pp. 188-199, figs. 3-5, 1896.

Describes the occurrence of the tinguaite dikes and the petrographic and chemical characters of the rocks.

726 —— Missourite, a new leucite rock from the Highwood Mountains of Montana.

Am. Jour. Sci., 4th ser., vol. ii, pp. 315-323, 1896.

Describes the geologic occurrence, megascopic and microscopic characters and chemical analyses of the new rock type, Missourite.

727 —— Geology of the Little Rocky Mountains [Montana].

Jour. of Geol., vol. iv, pp. 399-428, figs. 1-3, 1896.

Describes the physiography of the region, the geologic structure and the lithologic character and distribution of the Cambrian, Siluro-Devonian, Jurassic, and Cretaceous rocks, and mentions the fossils collected. Describes the occurrence and petrographic character of the igneous rocks, including granite, porphyry, and phonolite. Gives a brief account of the occurrence of the gold and silver ores.

728 **Weeks** (Fred Boughton). Bibliography and Index of North American geology, paleontology, petrology, and mineralogy for 1892 and 1893.

U. S. Geol. Surv., Bull. No. 130, 210 pp., 1896.

Contains an authors' list of titles of papers and a subject index.

729 —— Bibliography and Index of North American geology, paleontology, petrology, and mineralogy for the year 1894.

U. S. Geol. Surv., Bull. No. 135, 141 pp., 1896.

730 —— Bibliography and Index of North American geology, paleontology, petrology, and mineralogy for the year 1895.

U. S. Geol. Surv., Bull. No. 146, 130 pp., 1896.

731 **Weller** (Stuart). [Review of the "Thirteenth Annual report of the State Geologist (New York) for the year 1893," by James Hall.]

Jour. of Geol., vol. iv, pp. 116-119, 1896.

732 —— [Review of "Neocene Mollusca of Texas, or fossils from the deep well at Galveston," by G. D. Harris.]

Jour. of Geol., vol. iv, p. 126 (12 l.), 1896.

733 **Weller** (Stuart). [Review of "Geological biology, an introduction to the geological history of organisms," by H. S. Williams.]
Jour. of Geol., vol iv, pp. 355–360, 1896.

734 —— [Review of "Canadian fossil insects," by S. H. Scudder.]
Jour. of Geol., vol. iv, pp. 360–361, 1896.

735 —— and **Davidson** (A. D.). Petalocrinus murabilis n. sp., and a new American fauna.
Jour. of Geol., vol. iv, pp. 166–173, pls. vi–vii, 1896.

Describes new species from the Niagara of Iowa, which are closely related to Goniophyllum and Crotalocrinus of the Gotland limestone of Sweden and Wenlock limestone of England.

736 **Wells** (G. M.). The Florida rock-phosphate deposits.
Am. Inst. Mg. Engrs.., Trans., vol. xxv, pp. 163–172, 1896.

Presents two maps of Florida showing the location of the phosphate districts and describes the character and extent of the rock-phosphate beds.

737 **Westgate** (Lewis G.). The geology of the northern part of Jenny Jump Mountain, in Warren County, N. J.
N. J. Geol. Surv., Ann. Rept. for 1895, pp. 21–61, pls. iv–vi, 1896.

Describes the occurrence and petrographic characters of the gneisses, pegmatites, epidote rock, amphibolites, and diabase. Discusses the distribution and petrographic characters of the crystalline limestones and discusses its age. Presents a geologic map of the region.

738 **Weston** (T. C.). Notes on concretions found in Canadian rocks.
N. S. Inst. Sci., Proc. and Trans., 2d ser., vol. ii, pp. 1–9, figs. 1–6, 1896.

Describes the characters of concretions from various geologic horizons in British Columbia.

739 —— Notes on the geology of Newfoundland.
N. S. Inst. Sci., Proc. and Trans., 2d ser., vol. ii, pp. 150–157, 1896.

Describes the general features of the Archean, Algonkian, Cambrian, Silurian, Devonian, and Carboniferous rocks of Newfoundland.

740 **Wheeler** (H. A.). Clays and shales [Bevier sheet, Missouri].
Mo. Geol. Surv., vol. ix, sheet rept. No. 2, pp. 57–67, 1896.

Describes the economic features of the shales and clays occurring in the area of the Bevier sheet [Missouri].

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Am. Geol., vol. xviii, pp. 337–350, pl. xii, 1896.

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742 **White** (David). Fossil plants of the Hindostan whetstone beds [Indiana].
Ind. Dept. of Geol. and Nat. Res., 20th Ann. Rept., pp. 354–355, 1896.

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745 —— The faunas of the upper Ordovician strata at Trenton Falls, N. Y.

N. Y. Acad. Sci., Trans., vol. xv, pp. 71–96, pls. iii–v, 1896.

Reviews the history of the term Trenton limestone and the original descriptions of the type section. Describes the stratigraphy and gives faunal lists of different localities, with remarks on the physical features. Presents a list of fossils for which Trenton Falls is the type locality and a table of faunas of the various zones.

746 —— **Van Ingen** (Gilbert) and. An account of the summer's work in geology on Lake Champlain.

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747 **Whiteaves** (J. F.). Notes on some of the Cretaceous fossils collected during Captain Palliser's explorations in British North America in 1857–60.

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748 —— On some fossils from the Nanaimo group of the Vancouver Cretaceous.

Canada Roy. Soc., Proc. and Trans., 2d ser., vol. i, sect. iv, pp. 119–133, pls. ii–iii, 1896.

Comprises a revision of the nomenclature of certain fossils of this group and description of new species.

749 —— Notes on some fossils from the Cretaceous rocks of British Columbia, with descriptions of two species that appear to be new.

Can. Rec. Sci., vol. vi, pp. 313–318, pl. ii, 1895.

Describes Aniscoceras vancouverense, Heteroceras hornbyense, and H. perversum.

750 —— Description of eight new species of fossils from the (Galena) Trenton limestones of Lake Winnipeg and the Red River Valley.

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751 **Whiteaves** (J. F.). Canadian stromatoporoids.
Can. Rec. Sci., vol. vii, pp. 129–146, 1896.
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The fossils described are mainly from the Trenton group of Wisconsin.

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755 **Wieband** (George R.). Archelon ischyros; a new gigantic cryptodire testudinate from the Fort Pierre Cretaceous of South Dakota.
Am. Jour. Sci., 4th ser., vol. ii, pp. 401–412, pl. vi, 1896.
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756 **Wilkens** (H. A. J.), **Nitze** (H. B. C.) and. The present condition of gold mining in the southern Appalachian States.
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757 **Williams** (Edward H., jr.). The mammoth bed at Morea, Pa.
Science, new ser., vol. iii, pp. 782–783, 1896.
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758 **Williams** (Henry Shaler). On the origin of the Choteau fauna.
Jour. of Geol., vol. iv, pp. 283–290, 1896.
This paper is mainly a review of a paper by S. Weller on "A circum-insular Paleozoic fauna, with remarks on the modification of faunas due to a sinking of the land."

759 **Willis** (Bailey). The geology of the Cascade Mountains.
Johns Hopkins Univ. Circ., vol. xv, p. 90, 1896.
Describes the history of the Cretaceous period in Washington and the Glacial phenomena of the region.

760 **Williston** (S. W.). On the skull of Ornithostoma.
Kans. Univ. Quart., vol. iv, pp. 195–197, pl. 1, 1896.
Describes characters of a skull recently found in western Kansas.

761 **Wilson** (Andrew Gordon). Frozen streams of the Iowa drift border.

Am. Geol., vol. xvii, pp. 364-371, 1896.

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762 —— Subdivisions of the Upper Silurian in northeastern Iowa.

Abstract: Am. Assoc. Adv. Sci., Proc., vol. xliv, p. 137 (9 l.), 1896.

763 **Winchell** (N. H.). Microscopic characters of the Fisher meteorite (Minnesota No. 1).

Am. Geol., vol. xvii, pp. 173-176 and 234-238, 1896.

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764 —— The Black River limestone at Lake Nipissing.

Am. Geol., vol. xviii, pp. 178-179, 1896.

Gives a list of fossils collected from the limestone and describes its characteristics.

765 —— The Arlington iron—Minnesota, No. 2.

Am. Geol., vol. xviii, pp. 267-271, pl. x, 1896.

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766 —— and **Grant** (U. S.). Volcanic ash from the north shore of Lake Superior.

Am. Geol., vol. xviii, pp. 211-213, 1896.

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767 **Winslow** (Arthur). The disseminated lead ores of southeastern Missouri.

U. S. Geol. Surv., Bull. No. 132, 31 pp., 1896.

Describes the stratigraphic and lithologic features of the Archean and Ordovician strata, the geologic structure and the distribution and character of the ore bodies, with notes on the mines. Accompanied by a geologic map.

768 —— A report on the Higginsville sheet, Lafayette County [Missouri].

Mo. Geol. Surv., vol. ix, sheet rept. No. 1, 99 pp., pls. i-iii, figs. 1-7, 1896.

Describes the physiography of the region, the distribution and characters of the Carboniferous and Quaternary formations, and the occurrence and character of the coal seams.

769 —— The Bevier sheet, including portions of Macon, Randolph, and Chariton counties [Missouri].

Mo. Geol. Surv., sheet No. 2, 1893.

Includes an abstract of accompanying report on the geology, a geologic and topographic map, and a sheet of columnar and structure sections.

770 —— The Iron Mountain sheet, including portions of Iron, St. Francois, and Madison counties [Missouri].

Mo. Geol Surv., sheet No. 3, 1894.

Gives an abstract of accompanying report on the geology, a geologic map of the region, and a sheet of structure and columnar sections.

771 **Winslow** (Arthur), **Haworth** (Erasmus), and **Nason** (Frank L.). A report on the Iron Mountain sheet, including portions of Iron, St. Francois, and Madison counties [Missouri].

Mo. Geol. Surv., vol. ix, sheet rept. No. 3, 85 pp., pls. i–v, figs. 1–14, 1896.

Describes the physiography of the area, the character of the Archean, Algonkian, and Paleozoic rocks and their structural relations, and the economic geology of the iron deposits and building stones.

772 **Wolff** (J. E.). On an occurrence of theralite in Costa Rica, Central America.

Am. Jour. Sci., 4th ser., vol. i, pp. 271–272, 1896.

Describes the occurrence and petrographic characters of this rock variety.

773 **Woodhouse** (C. C., jr.). Coal fields of Washington.

Mining, vol. i, pp. 67–71, 1896.

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774 **Woodward** (Henry). On some podophthalmatous crustacea from the Cretaceous formation of Vancouver and Queen Charlotte islands [British Columbia].

London Geol. Soc., Quart. Jour., vol. lii, pp. 221–228, figs. 1–6, 1896.

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775 **Woodworth** (J. B.). The retreat of the ice sheet in the Narragansett Bay region.

Am. Geol., vol. xviii, pp. 150–168, pl. vi, 1896.

Describes the different stages of the retreat of the ice sheet and discusses the evidences as to the time interval between these stages. Accompanied by geologic map.

776 —— The ice sheet in Glacial Narragansett Bay.

Am. Geol., vol. xviii, pp. 391–392 (correspondence), 1896.

Gives additional data as to the Glacial phenomena of the region.

777 —— On the fracture system of joints, with remarks on certain great fractures.

Boston Soc. Nat. Hist., Proc., vol. xxvii, pp. 163–183, pls. 1–5, 1896.

Discusses the phenomena of joints as exhibited in the "Cambridge slates" of Massachusetts and gives a list of papers on the subject of joints.

778 —— and **Marbut** (C. F.). The Queens River moraine in Rhode Island.

Jour. of Geol., vol. iv, pp. 691–703, figs. 1–7, 1896.

Describes the character and extent of this moraine in Rhode Island.

779 —— **Shaler** (N. S.), and **Marbut** (C. F.). The Glacial brick clays of Rhode Island and southeastern Massachusetts.

See Shaler (N. S.), Woodworth (J. B.), and Marbut (C. F.), No. 612.

780 **Woolman** (Lewis). Report on artesian wells [New Jersey].
N. J. Geol. Surv., Ann. Rept. 1895, pp. 63-95, 1896.
Gives the sections of a number of artesian wells penetrating Cretaceous and Tertiary strata.

781 **Wortman** (J. L.) Species of Hyracotherium and allied perissodactyls from the Wahsatch and Wind River beds of North America.
Am. Mus. Nat. Hist., Bull., vol. viii, pp. 81-110, pl. ii, figs. 1-18, 1896.
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782 —— Psittacotherium, a member of a new and primitive suborder of the Edentata.
Am. Mus. Nat. Hist., Bull., vol. viii, pp. 259-262, 1896.
Describes an anterior limb of Psittacotherium multifragum Cope from New Mexico and discusses the relationships of this genus.

783 —— The North American origin of the edentates.
Science, new ser., vol. iv, pp. 865-866, 1896.
Discusses the origin and affinities of the edentates.

784 **Wright** (Fred B.). The origin of the wind gap, Pennsylvania.
Am. Geol., vol. xviii, pp. 120-123, 1896.
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785 **Wright** (G. Frederick). The age of the second terrace on the Ohio at Brilliant, near Steubenville [Ohio].
Jour. of Geol., vol. iv, pp. 218-219, 1896.
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786 —— The age of the Philadelphia brick clay [Pennsylvania].
Science, new ser., vol. iii, pp. 242-243, 1896.
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787 **Youtz** (L. A.). Clays of the Indianola brick, tile, and pottery works [Iowa].
Iowa Acad. Sci., Proc., vol. iii, pp. 40-44, 1896.
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788 **Zittel** (Karl von). Paleontology and the biogenetic law.
Am. Geol., vol. xviii, pp. 140-150, 1896.
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Timepiece of geology, Claypole, No. 126.
Validity of Bohemillidæ Barrande, Beecher, No. 51.
Genera and species described.
Acer amboyense n. sp., Newberry, No. 519.
Acerates sp., Newberry, No. 519.
Actæon
chipolanus n. sp., Dall, No. 158.
galvestonensis n. sp., Harris, No. 278.
myakkanus n. sp., Dall, No. 158.
quercollis n. sp., Harris, No. 279.
(Ristaxis) fusulus n. sp., Dall, No. 158.
(Tornatellæa) bella, Harris, No. 279.
Actinocrinus
jessieæ n. sp., Miller and Gurley, No. 508.
bischoffi n. sp., Miller and Gurley, No. 510.
pallubrum n. sp., Miller and Gurley, No. 509.
pettisensis n. sp., Miller and Gurley, No. 510.
sampsoni n. sp., Miller and Gurley, No. 510.
sobrinus n. sp., Miller and Gurley, No. 510.
spectabilis n. sp., Miller and Gurley, No. 510.
subpulchellus n. sp., Miller and Gurley, No. 510.
subscitulus n. sp., Miller and Gurley, No. 510.
Æscupophyllum hastingsense n. sp., Dawson, No. 176.
Agaricocrinus
adamensis n. sp., Miller and Gurley, No. 509.
hodgsoni n. sp., Miller and Gurley, No. 508.
illinoisensis n. sp., Miller and Gurley, 508.
Agassizocrinus ovalis n. sp., Miller and Gurley, No. 509.
Agathamus, Marsh, No. 480.
Agnostus Brongniart, Matthew, No. 490.
acadicus Hartt, Matthew, No. 490.
declivis, Matthew, No. 490.
davidis Hicks, Matthew, No. 490.
fallax, Matthew, No. 490.
var. concinnus, Matthew, No. 490.
var. trilobatus, Matthew, No. 490.
var. vir, Matthew, No. 490.
fissus Lundgren, Matthew, No. 490.
var. trifissus n. var., Matthew, No. 490.
gibbus Linnarsson, Matthew, No. 490.
var. acutilobus, Matthew, No. 490.
var. partitus, Matthew, No. 490.
lævigatus Dalman, Matthew, No. 490.
ciceroides n. var., Matthew, No. 490.
mamilla n. var., Matthew, No. 490.
terranovicus n. var., Matthew, No. 490.
nathorsti Broegger, Matthew, No. 490.
var. confluens n. var., Matthew, No. 490.

Paleontology—Continued.
Genera and species described—Continued.
Agnostus
nudus Beyrich, Matthew, No. 490.
obtusilobus, Matthew, No. 490.
parvifrons, Linnarsson, Matthew, No. 490.
tessella, Matthew, No. 490.
truncatus, n. var., Matthew, No. 490.
punctuosus Angelin, Matthew, No. 490.
regulus, Matthew, No. 490.
rex var. transectus n. var., Matthew, No. 490.
umbo, Matthew, No. 490.
Allosaurus, Marsh, No. 480.
Alota n. gen., Matthew, No. 490.
flexilis n. sp., Matthew, No. 490.
Alveolites glomeratus, Say, No. 599.
Amaura (Amauropsis?) tombigbeensis n. sp., Harris, No. 279.
Amauropsis
jacksonensis n. sp., Harris, No. 280.
perovata Con., Harris, No. 277.
Amberleya dilleri n. sp., Stanton, No. 648.
Ambonychia
attenuata, Whitfield, No. 752.
erecta, Whitfield, No. 752.
lamellosa, Whitfield, No. 752.
planistriata, Whitfield, No. 752.
Ammosaurus, Marsh, No. 480.
Amphidesma subovata, Say, No. 599.
Amphipeltis paradoxus Salter, Matthew, No. 488.
Amphoracrinus
blairi n. sp., Miller and Gurley, No. 508.
jessieæ n. sp., Miller and Gurley, No. 510.
sampsoni n. sp., Miller and Gurley, 509.
Anaptogonia
cloacina n. sp., Cope, No. 136.
hiatidens Cope, Cope, No. 136.
Anchisaurus, Marsh, No. 480.
solus, Marsh, No. 480.
Anchura kiowana n. sp., Cragin, No. 142.
Anemia stricta n. sp., Newberry, No. 519.
Andromeda
flexuosa n. sp., Newberry, No. 519.
latifolia n. sp., Newberry, No. 519.
novæ-cæsareæ Hollick n. sp., Newberry, No. 519.
parlatorii Heer, Newberry, No. 519.
Aniscoceras vancouverense, Whiteaves, No. 749.
Anomia mcgeei Clark, Clark, No. 118, 122.
senescens n. sp., Stanton, No. 648.
Anosoceras vancouverense Gabb, Whiteaves, No. 748.
Antillia biloba (Duchassaing), Gane, No. 235.
Apatosaurus, Marsh, No. 480. 481.
Aporrhais sp., Harris, No. 279.
sp., Stanton, No. 648.
Aptychus (?) knoxvillensis n. sp., Stanton, No. 648.
mexicanus n. sp., Aguilera, No. 10.

Paleontology—Continued.

Genera and species described—Continued.

- Aralia
  - formosa Heer (?), Newberry, No. 519
  - grönlandica Heer, Newberry, No. 519
  - palmata n. sp., Newberry, No. 519.
  - patens n. sp., Newberry, No. 519.
  - polymorpha n. sp., Newberry, No. 519.
  - quinquepartita Lesq., Newberry, No. 519.
  - rotundiloba n. sp., Newberry, No. 519.
  - wellingtoniana Lesq., Newberry, No. 519.
- Arca
  - arata, Say, No. 599.
  - centenaria, Say, No. 599.
  - incile, Say, No. 599.
  - labiata Sowerby var., Harris, No. 278.
  - ponderosa var. carolinensis, Harris, No. 278.
  - rhomboidella Lea var., Vaughan, No. 698.
  - tehamaensis n. sp., Stanton, No. 648.
  - textrina n. sp., Stanton, No. 648.
  - transversa var. busana n. var., Harris, No. 278.
  - sp., Harris, No. 279.
- Archæocidaris
  - agassizii Hall, Jackson, No. 357.
  - drydenensis Vanuxem, Jackson, No. 357.
  - wortheni, Jackson, No. 357.
- Archelon ischyros, Wieland, No. 755.
- Arcta puncticostata, Ami, No. 15.
- Ascoceras costulatum n. sp., Whiteaves, No. 750.
- Aspidoceras alamitocensis n. sp., Aguilera, No. 10.
- Asplenium
  - dicksonianum Heer, Newberry, No. 519.
  - foersteri Deb. and Ett. ?, Newberry, No. 519.
- Astarte
  - aldrichiana n. sp., Harris, No. 279.
  - californica n. sp., Stanton, No. 648.
  - corrugata n. sp., Stanton, No. 648.
  - marylandica n. sp., Clark, Nos. 118, 122.
  - smithvillensis var. Har., Harris, No. 280.
  - smithvillensis var. mediavia, Harris, No. 279.
  - subpontis n. sp., Harris, No. 279.
  - trapezoidalis n. sp., Stanton, No. 648.
  - undulata, Say, No. 599.
  - vicina, Say, No. 599.
- Astrangia lineata (Conrad), Gane, No. 235.
- Astroporites ottawaensis n. sp., Lambe, No. 434.
- Atlantosaurus, Marsh, Nos. 480, 481.
- Atresius liratus Gabb, Stanton, No. 648.
- Atys
  - obscurata n. sp., Dall, No. 158.
  - oedemata n. sp., Dall, No. 158.
  - robustoides n. sp., Aldrich, No. 11.
  - robustoides ?, Harris, No. 279.
  - salina n. sp., Dall, No. 158.
  - (Acrostomma) gracilis n. sp., Dall, No. 158.
- Aucella Keyserling, Stanton, No. 648.
  - crassicollis Keyserling, Stanton, No. 648.
  - piochii Gabb, Stanton, No. 648.

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Genera and species described—Continued.

- Avicula dispar n. sp., Cragin, No. 142.
  - (Oxytoma) whiteavesi n. sp., Stanton, No. 648.
- Avicula sp., Harris, No. 279.
- Aviculopecten lautus var. ithacensis n. var., Kindle, No. 406.
- Axinella (?), Merrill, No. 504.
- Azygograptus (?) walcotti Lapworth n. sp., Gurley, No. 265.
- Baculites Lam., Say, No. 599.
  - chicoensis Trask, Whiteaves, No. 747.
  - compressa, Say, No. 599.
  - ovata, Say, No. 599.
- Baiera incurvata Heer (?), Newberry, No. 519.
- Barycrinus
  - elrodi n. sp., Miller and Gurley, No. 508.
  - neglectus n. sp., Miller and Gurley, No. 509.
  - sampsoni n. sp., Miller and Gurley, No. 510.
- Batocrinus
  - adamsensis n. sp., Miller and Gurley, No. 508.
  - affinis n. sp., Miller and Gurley, No. 510.
  - albersi n. sp., Miller and Gurley, No. 510.
  - approximatus n. sp., Miller and Gurley, No. 510.
  - argutus n. sp., Miller and Gurley, Nos. 508, 510.
  - asper n. sp., Miller and Gurley, No. 508.
  - asperatus n. sp., Miller and Gurley, No. 508.
  - basilicus n. sp., Miller and Gurley, No. 508.
  - cistula n. sp., Miller and Gurley, No. 508.
  - cognatus n. sp., Miller and Gurley, No. 510.
  - complanatus n. sp., Miller and Gurley, No. 510.
  - consanguineus n. sp., Miller and Gurley, No. 510.
  - delicatulus n. sp., Miller and Gurley, No. 509.
  - enodatus n. sp., Miller and Gurley, No. 510.
  - enodis n. sp., Miller and Gurley, No. 510.
  - faberi n. sp., Miller and Gurley, No. 509.
  - folliculus n. sp., Miller and Gurley, No. 508.
  - germanus n. sp., Miller and Gurley, No. 508.
  - glaber n. sp., Miller and Gurley, No. 510.
  - hodgsoni n. sp., Miller and Gurley, No. 508.
  - insolens n. sp., Miller and Gurley, No. 510.
  - jessieæ n. sp., Miller and Gurley, No. 508.
  - levigatus n. sp., Miller and Gurley, No. 510.
  - levis n. sp., Miller and Gurley, No. 510.
  - modulus n. sp., Miller and Gurley, No. 508.
  - nanus n. sp., Miller and Gurley, No. 508.
  - nitens n. sp., Miller and Gurley, No. 509.
  - nodosarius n. sp., Miller and Gurley, No. 510.
  - nodosus n. sp., Miller and Gurley, No. 509.
  - nodulosus n. sp., Miller and Gurley, No. 509.
  - parilis n. sp., Miller and Gurley, No. 509.

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Genera and species described—Continued.
Batocrinus pettisensis n. sp., Miller and Gurley, No. 509.
  politus n. sp., Miller and Gurley, No. 510.
  proximus n. sp., Miller and Gurley, No. 508.
  regalis n. sp., Miller and Gurley, No. 509.
  remotus n. sp., Miller and Gurley, No. 510.
  repertus n. sp., Miller and Gurley, No. 510.
  repositus n. sp., Miller and Gurley, No. 510.
  rudis n. sp., Miller and Gurley, No. 510.
  saccellus n. sp., Miller and Gurley, No. 510.
  sagetownensis n. sp., Miller and Gurley, No. 510.
  salemensis n. sp., Miller and Gurley, No. 509.
  sedaliensis n. sp., Miller and Gurley, No. 510.
  selectus n. sp., Miller and Gurley, No. 510.
  signatus n. sp., Miller and Gurley, No. 509.
  solitarius n. sp., Miller and Gurley, No. 508.
  speciosus n. sp., Miller and Gurley, No. 510.
  spurius n. sp., Miller and Gurley, No. 509.
  stelliformuis n. sp., Miller and Gurley, No. 509.
  strenuus n. sp., Miller and Gurley, No. 509.
  subæquatus n. sp., Miller and Gurley, No. 510.
  sublevis n. sp., Miller and Gurley, No. 510.
  subovatus n. sp., Miller and Gurley, No. 510.
  subrotundus n. sp., Miller and Gurley, No. 510.
  subscitulus n. sp., Miller and Gurley, No. 510.
  variabilis n. sp., Miller and Gurley, No. 510.
Bauhinia
  cretacea Newb., Newberry, No. 519.
  (?) gigantea n. sp., Newberry, No. 519.
Belemnites
  impressus Gabb, Stanton, No. 648.
  tehamænsis n. sp., Stanton, No. 648.
  af. obeliscus Phillips, Aguilera, No. 10.
  af. puzosi d'Orbigny, Aguilera, No. 10.
  sp?, Aguilera, No. 10.
  sp., Stanton, No. 648.
Bellerophon
  blairi n. sp., Miller and Gurley, No. 511.
  ithacensis n. sp., Kindle, No. 406.
  sedaliensis n. sp., Miller and Gurley, No, 511.
Beluga catodon, Dawson, No. 178.
Bittium galvestonense n. sp., Harris, No. 278.
Blairella n. gen., Miller and Gurley, No. 511.
  sedaliensis n. sp., Miller and Gurley, No. 511.
Bohemillia stufenda, Beecher, No. 51.
Borsonia
  ludoviciana n. sp., Vaughan, No, 698.
  plenta Har. and Ald., Aldrich, No. 11.

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Genera and species described—Continued.
Borsonia (Scobinella) conradiana n. sp., Aldrich, No. 11.
Borsonia sp., Aldrich, No. 11.
Brachyphyllum crassum Lesq., Newberry, No. 519.
Brachysphingus liratus Gabb, Stanton, No. 647.
Brontosaurus, Marsh, Nos. 480, 481.
Bryograptus? multiramosus n. sp., Gurley, No. 265.
Brooksella n. gen., Walcott, No. 709.
  alternata n. sp., Walcott, No. 709.
  confusa n. sp., Walcott, No. 709.
Buccinum porcinum, Say, No. 599.
Bullina
  leai n. sp., Aldrich, No. 11.
  (Abderospira) chipolana n. sp., Dall, No. 158.
Buthograptus laxus, Whitfield, No. 752.
Cadulus
  bellulus n. sp., Clark, Nos. 118, 122.
  turgidus, Harris, No. 279.
Cæsalpina cookiana Hollick n. sp., Newberry, No. 519.
Callianassa whiteavesii n. sp., Woodward, No. 774.
Callithamnopsis Whitfield, Whitfield, No. 752.
  fruticosa, Whitfield, No. 752.
Calcytes
  diospyriformis n. sp., Newberry, No. 519.
  parvus n. sp., Newberry, No. 519.
Calyptræa
  costata, Say, No. 599.
  grandis, Say, No. 599.
  trochiformis Lamarck, Clark, No, 118.
Calyptræ sp., Harris, No. 279.
Calyptrophorus
  jacksoni n. sp., Clark, Nos. 118, 122.
  velatus var. compressa, Harris, No. 279.
Camptosaurus, Marsh, Nos. 480, 481.
Cancellaria
  galvestonensis n. sp., Harris, No. 278.
  priama n. sp., Harris, No. 277.
  silværupis n. sp., Harris. No. 280.
  tortiplica Con., Harris, No. 280.
Candona
  candida var. depressa n. var., Chapman, No. 115.
  gracilis n. sp., Chapman, No. 115.
  lactea var. acuminata n. var., Chapman, No. 115.
Carcharodon polygyrus Agassiz, Clark, No. 118.
Cardinia angulifera, Ami, No. 15.
Cardiniopsis n. gen., Stanton, No. 648.
  unioides, n. sp., Stanton, No. 648.
Cardium
  galvestonense n. sp., Harris, No. 278.
  harrisi n. sp., Vaughan, No. 698.
  quinordinatum n. sp., Cragin, No. 142.
Carex
  burrardiana n. sp., Dawson, No. 176.
  vancouverensis n. sp., Dawson, No. 176.
Cariacus lævicornis n. sp., Cope, No. 136.

Paleontology—Continued.
Genera and species described—Continued.
Caricella
claibornensis Harris, Harris, No. 277.
leana, Harris, No. 279.
podagrina Dall, Harris, No. 280.
sp., Clark, No. 118.
Carolia (Wakullina) floridiana n. sp., Dall, No. 158.
Carpolithus
floribundus n. sp., Newberry, No. 519.
hirsutus n. sp., Newberry, No. 519.
ovæformis n. sp., Newberry, No. 519.
planiformis n. sp., Newberry, No. 519.
woodbridgensis n. sp., Newberry, No. 519.
Carvocaris Salter, Gurley, No. 265.
curvilatus n. sp., Gurley, No. 265.
oblongus n. sp., Gurley, No. 265.
wrightii Salter, Gurley, No. 265.
Caryocrinus
hammelli n. sp., Miller and Gurley, No. 509.
milliganæ n. sp., Miller and Gurley, No. 509.
Cassidaris brevidentata Ald., var., Harris, No. 280.
Catenipora Lam., Say, No. 599.
Celastrophyllum
augustifolium n. sp., Newberry, No. 519.
brittonianum Hollick n. sp., Newberry, No. 519.
crenatum Heer, Newberry, No. 519.
cretaceum Lesq., Newberry, No. 519.
grandifolium n. sp., Newberry, No. 519.
minus Hollick n. sp., Newberry, No. 519.
newberryanum Hollick n. sp., Newberry, No. 519.
robustum n. sp., Newberry, No. 519.
spatulatum n. sp., Newberry, No. 519.
undulatum n. sp., Newberry, No. 519.
Celastrus arctica Heer, Newberry, No. 519.
Cephalotropis coronatus n. gen. et sp., Cope, No. 135.
Ceratiocaris poduriformis n. sp., Whitfield, No. 754.
Ceratops, Marsh, No. 480.
Ceratosaurus, Marsh, Nos. 480, 481.
Cerithioderma (Mesostoma) prima Con., Aldrich, No. 11.
Cerithium
gainesensis n. sp., Harris, No. 279.
galvestonense n. sp., Harris, No. 278.
globoleve n. sp., Harris, No. 279.
mediaviæ n. sp., Harris, No. 279.
paskentaenis n. sp., Stanton, No. 648.
penrosei, Harris, No. 279.
strigosum n. sp., Stanton, No. 648.
(Companile) claytonense, Harris, No. 279.
sp., Harris, No. 278.
sp., Stanton, No. 648.
Cetotherium
cephalus, Cope, No. 135.
davidsonii, Cope, No. 135.
leptocentrum, Cope, No. 135.
megalophysum, Cope, No. 135.

Paleontology—Continued.
Genera and species described—Continued.
Chænomya longa n. sp., Miller and Gurley, No. 511.
Chama gainesensis n. sp., Harris, No. 279.
Chione ulocyma, Harris, No. 278.
Chondrilla? sp., Merrill, No. 504.
Condrites
cupressinus n. sp., Whiteaves, No. 750.
flexuosus n. sp., Newberry, No. 519.
gracillimus n. sp., Whiteaves, No. 750.
patulus n. sp., Whiteaves, No. 750.
Chondrophyllum
obovatum n. sp., Newberry, No. 519.
reticulatum Hollick n. sp., Newberry, No. 519.
Cladocora johnsoni n. sp., Gane, No. 235.
Claosaurus, Marsh, Nos. 480, 481.
Climacograptus
antiquus Lapworth n. sp., Gurley, No. 265.
cælatus Lapworth, Gurley, No. 265.
caudatus Lapworth, Gurley, No. 265.
caudatus laticaulis n. var., Gurley, No. 265.
kampotheca n. sp., Gurley, No. 265.
oligotheca n. sp., Gurley, No. 265.
phyllophorus n. sp., Gurley, No. 265.
Clitambonites (Gonambonites) plana Pander var., Matthew, No. 487.
var. retroflexa de Verneuil, Matthew, No. 487.
Cinnamomum intermedium n. sp., Newberry, No. 519.
Ciprina coteroi n. sp., Aguilera, No. 10.
Ciprymeria (?) mexicana n. sp., Aguilera, No. 10.
Coccosteus decipiens Ag., Dean, No. 181.
Codaster jessieæ n. sp., Miller and Gurley, No. 510.
Cirripodites n. gen., Matthew, No. 490.
Cissites
crispus Vel.?, Newberry, No. 519.
formosus Heer, Newberry, No. 519.
Cistella beecheri n. sp., Clark, No. 121.
plicatelis n. sp., Clark, No. 121.
Cœlurus, Marsh, No. 480.
Colodon.
dakotensis O. and W., Hatcher, No. 283.
(Lophiodon) occidentalis Leidy, Hatcher, No. 283.
Columbella mississippiensis M'r and Ald., Aldrich, No. 11.
Colutea primordialis Heer, Newberry, No. 519.
Conocardium aliforme Sowerby, Smith, No 628.
Conomitra polita n. sp., Vaughan, No. 698.
Conularia
gracilis Hall, Ruedmann, Nos. 585, 586.
greenei n. sp., Miller and Gurley, No. 511.
roeperi n. sp., Miller and Gurley, No. 511.
sedaliensis n. sp., Miller and Gurley, No. 511.
Conularida n. ord., Miller and Gurley, No. 511.
Conus Linnaeus, Dall, No. 158.
chipolanus n. sp., Dall, No. 158.

Paleontology—Continued.
Genera and species described—Continued.
Conus demiurgus n. sp., Dall, No. 158.
  isomitratus n. sp., Dall, No. 158.
    var. **sulculus** Dall, Dall, No. 158.
  puncticulatus, Harris, No. 278.
Coprolites, Clark, No. 118.
Coralliophaga bryani n. sp., Clark, Nos. 118, 122.
Corbula
  aldrichi Meyer, Clark, No. 118.
  concha n. sp., Aldrich, No. 11.
  crassicostata n. sp., Cragin, No. 142.
  cuneata, Say, No. 599.
  filosa n. sp., Stanton, No. 648.
  galvestonensis n. sp., Harris, No. 278.
  inæquale, Say, No. 599.
  nasuta Conrad, Clark, No. 118.
  oniscus Conrad, Clark, No. 118.
  (?) **persulcata** n. sp., Stanton, No. 648.
  squiftiana (?), Harris, No. 278.
  subcompressa, Harris, No. 279.
  (**Potamomya**) **priscopsis** n. sp., Harris, No. 278.
Cornophyllum vetustum n. sp., Newberry, No. 519.
Crassatella
  alæformis Conrad, Clark, No. 118.
  aquiana Clark, Clark, Nos. 118, 122.
  gabbi, Harris, No. 279.
  gibbesi T. and H. var., Harris, No. 278.
  sepulcollis n. sp., Harris, No. 279.
  undulata, Say, No. 599.
  uniodes n. sp., Stanton, No. 647.
Creseis sp., Aldrich, No. 11.
Cristellaria
  cultrata (Montfort), Bagg, No. 21
  mamilligera Karrer, Bagg, No. 21.
  projecta n. sp., Bagg, No. 21.
Cucullæa
  gigantea Conrad, Clark, No. 118.
  macrodonta, Harris, No. 279.
  matthewsoni Gabb, Stanton, No. 647.
  saffordi, Harris, No. 279.
  (**Trigonarca**) **catorcensis** n. sp., Aguilera, No. 10.
Cunninghamites elegans (Corda) Endl., Newberry, No. 519.
Cyathocrinus
  blairi, Miller and Gurley, Nos. 508, 509.
  chouteauensis, Miller and Gurley, No. 509.
  faberi n. sp., Miller and Gurley, No. 510.
  waldronensis Miller and Dyer, Miller and Gurley, No. 508.
Cycadinocarpus circularis n. sp., Newberry, No. 519.
Cyclocypris californica n. sp., Chapman, No. 115.
Cyclonema pulchellum n. sp., Miller and Gurley, No. 511.
Cylichna
  meyeri n. sp., Aldrich, No. 11.
  meyeri, Harris, No. 279.
  venusta Clark, Clark, Nos. 118, 122.
  sp., Harris, No. 279.

Paleontology—Continued.
Genera and species described—Continued.
Cylichnella bidentata var. **galvestonensis** n. var., Harris, No. 278.
Cyllene bellana n. sp., Harris, No. 280.
Cyperites paucinervis Heer, Dawson, No. 176.
Cypræa
  pinguis Con., Harris, No. 280.
  smithi Ald., Harris, No. 280.
  suciensis nom. prov., Whiteaves, No. 748.
  sp., Harris, No. 279.
Cypria subangulata n. sp., Chapman, No. 115.
Cypricardella eximia n. sp., Miller and Gurley, No. 511.
Cypricardites
  niota, Whitfield, No. 752.
  rectirostris, Whitfield, No. 752.
  rotundatus, Whitfield, No. 752.
Cypridopsis pliocænica n. sp., Chapman, No. 115.
Cyprimeria lens Whiteaves, Whiteaves, No. 748.
Cyprina
  dalli Ald., Harris, No. 280.
  occidentalis Whiteaves, Stanton, No. 648.
  procera n. sp., Chapman, No. 115.
Cyrtoceras
  dunleithensis n. sp., Miller and Gurley, No. 511.
  eugium, Whitfield, No. 752.
  laticurvatum n. sp., Whiteaves, No. 750.
  loculosum, Whitfield, No. 752.
  neleus, Whitfield, No. 752.
  whitneyi, Whitfield, No. 752.
Cytherea
  arata Gabb, Whiteaves, No. 748.
  concentrica, Say, No. 599.
  convexa, Say, No. 599.
  eversa Conrad, Clark, No. 118.
  ovata Rogers, Clark, No. 118.
  subimpressa Conrad, Clark, No. 118.
Czekanowskia capilaris n. sp., Newberry, No. 519.
Dakbergia apiculata n. sp., Newberry, No. 519.
Dammara borealis Heer, Newberry, No. 519.
Dawsonia
  monodon n. sp., Gurley, No. 265.
  tridens n. sp., Gurley, No. 265.
Dendrograptus
  cf. **serpens** Hopkinson, Gurley, No. 265.
  unilateralis n. sp., Gurley, No. 265.
Dentalium
  attenuatum, Say, No. 599.
  californicum n. sp., Stanton, No. 648.
  mediaviense, Harris, No. 279.
  microstria Heilprin, Aldrich, No. 11.
  multannulatum n. sp., Aldrich, No. 11.
  tetragonum, Harris, No. 278.
Desmoceras californicum n. sp., Stanton, No. 648.
Desmograptus
  devonicus n. sp., Gurley, No. 265.
  macrodictyum n. sp., Gurley, No. 265.
Desmophyllum willcoxi n. sp., Gane, No. 235.

Paleontology—Continued.

- *Genera and species described*—Continued.
  - Dewalquea
    - grönlandica Heer (?), Newberry, No. 519.
    - trifoliata n. sp., Newberry, No. 519.
  - Diatomaceæ, Elmore, No. 197.
  - Dicellograpsus
    - gurleyi Lapworth n. sp., Gurley, No. 265.
    - intortus var. polythecatus n. var., Gurley, No. 265.
  - Dichograpsus remotus n. sp., Gurley, No. 265.
  - Dicranograptus
    - furcatus (Hall), Gurley, No. 265.
    - nicholsoni var. diapason n. var., Gurley, No. 265.
    - nicholsoni var. parvangulus Gurley, Gurley, No. 265.
  - Dictyonema
    - actinotum n. sp., Gurley, No. 265.
    - blairi n. sp., Gurley, No. 265.
    - cf. neenah Hall, Gurley, No. 265.
    - neenah, Whitfield, No. 752.
    - perexile n. sp., Gurley, No. 265.
  - Didymograptus
    - bipunctatus n. sp., Gurley, No. 265.
    - convexus n. sp., Gurley, No. 265.
    - hirundo Salter, Gurley, No. 265.
    - perflexus n. sp., Gurley, No. 265.
    - sagitticaulis n. sp., Gurley, No. 265.
  - Dinichthys, Eastman, No. 188.
    - gouldi Newberry, Dean, No. 181.
    - prentis-clarki, Claypole, No. 129.
    - terrelli Newberry, Dean, No. 181.
  - Dinictis paucidens, Riggs, No. 581.
  - Diospyros primæva Heer, Newberry, No. 519.
  - Diplodocus, Marsh, No. 480. 481.
  - Diplodonta hopkinsensis Clark, Clark, Nos. 118, 122.
  - Diplograpsis stenosus n. sp., Gurley, No. 265.
  - Dispotæa tubifera, Harris, No. 599.
  - Dissorhophus articulatus Cope, Cope, No. 137.
  - Dolatocrinus
    - aplatus n. sp., Miller and Gurley, Nos. 508, 509.
    - argutus n. sp., Miller and Gurley, No. 508.
    - arrosus n. sp., Miller and Gurley, No. 509.
    - asper n. sp., Miller and Gurley, No. 509.
    - aspratilis n. sp., Miller and Gurley, No. 509.
    - basilicus n. sp., Miller and Gurley, No. 509.
    - bellarugosus n. sp., Miller and Gurley, No. 508.
    - cælatus n. sp., Miller and Gurley, No, 508.
    - charlestownensis n. sp., Miller and Gurley, No. 508.
    - cistula n. sp., Miller and Gurley, No. 509.
    - dispar n. sp., Miller and Gurley, No. 509.
    - dissimilaris n. sp., Miller and Gurley, No. 509.
    - indianensis n. sp., Miller and Gurley, No. 508.
    - lagunculа n. sp., Miller and Gurley, No. 509.
    - lyoni n. sp., Miller and Gurley, No. 509.
    - peculiaris n. sp., Miller and Gurley, No. 509.

Paleontology—Continued.

- *Genera and species described*—Continued.
  - Dolatocrinus preciosus n. p., Miller and Gurley, No. 509.
  - Donax carinata var. galvestonensis, Harris, No. 278.
  - Dorycrinus
    - alabamensis n. sp., Miller and Gurley, No. 510.
    - faberi n. sp., Miller and Gurley, No. 510.
    - sampsoni n. sp., Miller and Gurley, No. 510.
  - Dosiniopsis lenticularis (Rogers), Clark, No. 118.
  - Dryophyllum stanleyanum n. sp., Dawson, No. 176.
  - Dryosaurus, Marsh, No. 480.
  - Dystactophycus mamillanum Miller and Dyer, James, No. 360.
  - Ecculiomphalus undulatus, Whitfield, No. 752.
  - Edmondia albersi n. sp., Miller and Gurley, No. 511.
  - Elymella missouriensis n. sp., Miller and Gurley, No. 511.
  - Enchostoma n. gen., Miller and Gurley, No. 511.
  - Enclimatoceras ulrichi, Harris, No. 279.
  - Encrinurus punctatus, Norton, No. 523.
  - Endolobus missouriensis Swallow, Smith, No. 628.
  - Entomocaris n. gen., Whitfield, No. 754.
    - monroei n. sp., Whitfield, No. 754.
    - telleri n. sp., Whitfield, No. 754.
  - Eozoon canadense, Dawson, No. 179.
  - Eriphyla galvestonensis n. sp., Harris, No. 278.
  - Erpetocypris
    - lata n. sp., Chapman, No. 115.
    - merriamiana n. sp., Chapman, No. 115.
  - Esperites? sp., Merrill, No. 504.
  - Eucalyptocrinus milliganæ, n. sp., Miller and Gurley, No. 510.
  - Eucalyptus
    - (?) angustifolia n. sp., Newberry, No. 519.
    - (?) attenuata n. sp,, Newberry, No. 519.
    - geinitzi Heer, Newberry, No. 519.
    - (?) nervosa n. sp., Newberry, No. 519.
    - (?) parvifolia n. sp., Newberry, No. 519.
  - Eucheilodon creno-carinata Heilp., Harris, No. 280.
  - Euclastes (?) sp. Clark, No. 118.
  - Eunema cretaceum n. sp., Whiteaves, No. 748.
  - Eupsammia
    - elaborata (Conrad), Vaughan, No. 689.
    - (?) pileolus (Conrad), Vaughan, No. 689.
  - Eurymartus
    - latus n. sp., Matthew, No. 488.
    - (?) spinulosus n. sp., Matthew, No. 488.
    - sp. ?, Matthew, No. 488.
  - Eurypterus kokomoensis n. sp., Miller and Gurley, No. 510.
  - Eurystomites plicatus n. sp., Whiteaves, No. 750.
  - Exilia pergracilis, Harris, No. 279.
  - Exogira potosina n. sp., Aguilera, No. 10.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Exogyra, Say, No. 599.
    - costata, Say, No. 599.
  - Favosites Lam., Say, No. 599.
    - striata, Say, No. 599.
  - Ficus
    - myricoides Hollick n. sp., Newberry, No. 519.
    - ovata n. sp., Newberry, No. 519.
    - shastensis (?) Lesq., Dawson, No. 176.
    - woolsoni n. sp., Newberry, No. 519.
  - Fissurella
    - bipunctata n. sp., Stanton, No. 648.
    - mediavia n. sp., Harris, No. 279.
    - redimicula, Say, No. 599.
  - Flabellum remondianum, Gabb, Stanton, No. 647.
  - Fontainea n. gen., Newberry, No. 519.
    - grandifolia n. sp., Newberry, No. 519.
  - Forbesocrinus
    - greenei n. sp., Miller and Gurley, No. 509.
    - jerseyensis n. sp., Miller and Gurley, No. 508.
    - macadamsi n. sp., Miller and Gurley, No. 509.
    - multibrachiatus Lyon and Casseday, Miller and Gurley, No. 508.
    - washingtonensis n. sp., Miller and Gurley, No. 508.
  - Frenelopsis
    - gracilis n. sp., Newberry, No. 519.
    - hoheneggeri (Ett.) Schenk (?), Newberry, No. 519.
  - Frondicularia
    - angusta var. dimidia, Bagg, No. 21.
    - clarki n. sp., Bagg, No. 21.
    - inversa Reuss, Bagg, No. 21.
    - lanceola Reuss, Bagg, No. 21.
  - Fusus
    - bellanus n. sp., Harris, No. 280.
    - costatus, Say, No. 599.
    - harrisi n. sp., Aldrich, No. 11.
    - hubbardanus n. sp., Harris, No. 279.
    - insectoides n. sp., Harris, No. 280.
    - meyeri var., Harris, No. 279.
    - (?) mohri n. sp., Aldrich, No. 11.
    - mohri, Harris, No. 279.
    - montgomeriensis n. sp., Vaughan, No. 698.
    - mortoni Lea, var., Harris, No. 280.
    - ostrarupis, Harris, No. 279.
    - quercollis n. sp., Harris. No. 279.
    - rugatus Ald., Harris, No. 280.
    - siphus n. sp., Aldrich, No. 11.
    - tortilis, Harris, No. 279.
    - (?) whitfieldi n. sp., Aldrich, No. 11.
    - (Levifusus) trabeatus Conrad, Clark, No. 118.
    - (Strepsidura) perlatus Conrad, Clark, No. 118.
    - sp., Clark, No. 118.
  - Fulgur
    - argutus n. sp., Clark, No. 122.
    - canaliculatus, Say, No. 599.
    - (?) dallianum n. sp., Harris, No. 279.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Fulgur eliceans, Say, No. 599.
    - eocense n. sp., Aldrich, No. 11.
  - Fulguroficus argutus Clark, Clark, No. 118.
  - Galeocerdo contortus Gibbes, Clark, No. 118.
  - Gastrioceras Hyatt, Smith, No. 628.
    - branneri n. sp., Smith, No. 628.
    - excelsum Meek, Smith, No. 628.
    - globulosum Meek and Worthen, Smith, No. 628.
    - marianum Verneul, Smith, No. 628.
    - sp. undet., Smith, No. 628.
  - Gastrochæna
    - cimitariopsis n. sp., Harris, No. 279.
    - gainesensis n. sp., Harris, 279.
    - larva Con., Aldrich, No. 11.
    - sp., Clark, No. 118.
  - Geinitzia formosa Herr (?), Newberry, No. 519.
  - Geodia?
    - (?) austini n. sp., Merrill, No. 504.
    - (?) cretacea n. sp., Merrill, No. 504.
    - (?) hilli n. sp., Merrill, No. 504.
    - (?) irregularis n. sp., Merrill, No. 504.
    - spini-curvata n. sp., Merrill, No. 504.
    - (?) spinipansata n. sp., Merrill, No. 504.
    - texana n. sp., Merrill, No. 504.
    - (?) tripunctata n. sp., Merrill, No. 504.
    - sp., Merrill, No. 504.
  - Gibbula glandula (Conrad), Clark, No. 118.
  - Gladiolites venosus (Hall), Gurley, No. 265.
  - Gleichenia
    - giesekiana Heer (?), Newberry, No. 519.
    - micromera Heer (?), Newberry, No. 519.
    - zippei Heer (?), Newberry, No. 519.
  - Glossograptus arthracanthus n. sp., Gurley, No. 265.
  - Glyphioceras diadema Goldfuss, Smith, No. 628.
  - Glyphostoma harrisi n. sp , Aldrich, No. 11.
  - Glyptaster milliganæ n. sp., Miller and Gurley, No. 510.
  - Goniasteroidocrinus faberi n. sp., Miller and Gurley, No. 510.
  - Goniatites
    - blairi n. sp., Miller and Gurley, No. 511.
    - elkhornensis n. sp., Miller and Gurley, No. 511.
    - fultonensis n. sp., Miller and Gurley, No. 511.
    - greencastlensis n. sp., Miller and Gurley, No. 511.
    - illinoisensis n. sp., Miller and Gurley, No. 511.
    - jessieæ n. sp., Miller and Gurley, No. 511.
    - kansasensis n. sp., Miller and Gurley, No. 511.
    - kentuckiensis, Miller and Gurley, No. 511.
    - lunatus n. sp., Miller and Gurley, No. 511.
    - montgomeryensis n. sp., Miller and Gurley, No. 511.
    - parrishi n. sp., Miller and Gurley, No. 511.
    - subcavus n. sp., Miller and Gurley, No. 511.
  - Goniobasis texana Heilprin, Aldrich, No. 11.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Gonioceras occidentale, Whitfield, No. 752.
  - Goniomya calderoni n. sp., Aguilera, No 10.
  - Goniophyllum pyramidale Hisinger, Weller and Davison, No. 735.
  - Graptolithus
    - lævis Hall, Gurley, No. 265.
    - (Diplograptus) peosta, Whitfield, No. 752.
  - Gryphea vesicularis Lamarck, Whiteaves, No. 748.
  - Gyrodes (Gyrodisca) Dall, Dall, No. 158.
    - duplinensis n. sp., Dall, No. 158.
  - Hallopus, Marsh, No. 480.
  - Haminea pompholyx n. sp., Dall, No. 158.
  - Hamites obstrictus Jimbo, Whiteaves, No. 748.
  - Haploceras
    - carinata n. sp., Aguilera, No. 10.
    - catorcensis n. sp., Aguilera, No. 10.
    - mazapilensis n. sp., Aguilera, No. 10.
  - Haplophragmium concava n. sp., Bagg, No. 21.
  - Harpa jacksonensis n. sp., Harris, No. 280.
  - Hausmannia rigida n. sp., Newberry, No. 519.
  - Hedera
    - obliqua n. sp., Newberry, No. 519.
    - primordialis Sap., Newberry, No. 519.
  - Helcion granulatus n. sp., Stanton, No. 648.
  - Hemipedina charltoni n. sp., Cragin, No. 142.
  - Heptodon Cope, Wortman, No. 781.
  - Heteroceras
    - hornbyense nom. prov., Whiteaves, No. 749.
    - perversum nom. prov., Whiteaves, No. 749.
  - Heteroterma
    - gabbi n. sp., Stanton, No. 647.
    - striata n. sp., Stanton, No. 647.
  - Holasaphus n. gen., Matthew, No. 487.
    - centropyge n. sp., Matthew, No. 487.
  - Holopea grandis n. sp., Miller and Gurley, No. 511.
  - Homolopsis richardsoni n. sp., Woodward, No. 774.
  - Homotrypa obliqua Ulrich, James, No. 360.
  - Homoya washita n. sp., Cragin, No. 142.
  - Hoplites
    - angulatus n. sp., Stanton, No. 648.
    - bifurcatus n. sp., Aguilera, No. 10.
    - calisto var., Aguilera, No. 10.
    - cohglani n. sp., Aguilera, No. 10.
    - crassiplicatus n. sp., Stanton, No. 648.
    - dilleri n. sp., Stanton, No. 648.
    - exceptionalis n. sp., Aguilera, No. 10.
    - heilprini n. sp., Aguilera, No. 10.
    - hyatti n. sp., Stanton, No. 648.
    - mexicanus n. sp., Aguilera, No. 10.
    - storrsi n. sp., Stanton, No. 648.
    - sp. ?, Aguilera, No. 10.
  - Hoplophoneous primævus, Adams, No. 8.
  - Hybodus clarkensis, n. sp., Cragin, No. 143.
  - Hymenæa dakotana Lesq., Newberry, No. 519.
  - Hymeraphia ? sp., Merrill, No. 504.
  - Hyolithes cf. tenuistriatus Linrs., Matthew, No. 487.
  - Hypotemnodon coryphæus n. sp., Eyerman, No. 204.
  - Hypsipleura
    - gregaria n. sp., Stanton, No. 648.
    - (?) occidentalis n. sp., Stanton, No. 648.
  - Hyracotherium Owen, Wortman, No. 781.
    - craspedotum Cope, Wortman, No. 781.
    - cristatum n. sp., Wortman, No. 781.
    - index Cope, Wortman, No. 781.
    - montanum n. sp., Wortman, No. 781.
    - tapirinum Cope, Wortman, No. 781.
    - vasacciense Cope, Wortman, No. 781.
    - (Pliolophus) cristonense Cope, Wortman, No. 781.
  - Ilex
    - (?) elongata n. sp., Newberry, No. 519.
    - (?) ovata n. sp., Newberry, No. 519.
  - Illænus taurus, Whitfield, No. 752.
  - Inoceramus
    - comancheana n. sp., Cragin, No. 142.
    - digitatus (Sowerby), Schmidt, Whiteaves, No. 748.
    - munsoni n. sp., Cragin, No. 142,
    - ovatus n. sp., Stanton, No. 648.
    - subundatus, Meek, Whiteaves, No. 747.
    - vancouverensis Shumard, Whiteaves, No. 747.
    - sp. ?, Whiteaves, No. 747.
  - Ischyrhiza (?) radiata Clark, Clark, Nos. 118, 122.
  - Isocardia
    - fraterna, Say, No. 509.
    - mediavia n. sp., Harris, No. 279.
  - Juglans arctica Heer (?), Newberry, No. 519.
  - Juniperus macilenta Heer, Newberry, No. 519.
  - Keilostoma mediavia n. sp., Harris, No. 279.
  - Lamna
    - (?) obliqua Agassiz, Clark, No. 118.
    - (?) quinquelateralis n. sp., Cragin, No. 143.
  - Laosaurus, Marsh, No. 480.
  - Laotira n. gen., Walcott, No. 709.
    - cambria n. sp., Walcott, No. 709.
  - Latirus
    - alabamensis n. sp., Aldrich, No. 11.
    - imbricatulus n. sp., Harris, No. 280.
    - leænsis n. sp., Harris, No. 280.
  - Laurophyllum
    - angustifolium n. sp., Newberry, No. 519.
    - lanceolatum n. sp., Newberry, No. 519.
    - minus n. sp., Newberry, No. 519.
  - Laurus plutonia Heer, Newberry, No. 519.
  - Lecanocrinus greenei n. sp., Miller and Gurley, 506.
  - Leda
    - alæformis (Gabb), Stanton, No. 647.
    - dabbi (Conrad), Stanton, No. 647.
    - elongatoidea n. sp., Aldrich, No. 11.
    - elongatoidea var. ?, Harris, No. 279.
    - glabba n. sp., Stanton, No. 648.
    - improcera (Conrad), Clark, No. 118.
    - lisbonensis n. sp., Aldrich, No. 11.
    - milamensis, Harris, No. 279.
    - parva (Rogers), Clark, No. 118.

Paleontology—Continued.

Genera and species described—Continued.

- Leda protexta (Conrad), Clark, No. 118.
  - quercollis n. sp., Harris, No. 279.
  - regina-jacksonis n. sp., Harris, No. 280.
  - robusta n. sp., Aldrich, No. 11.
  - saffordana n. sp., Harris, 279.
  - semenoides n. sp., Aldrich, No. 11.
  - (Adrana) cultelliformis (Rogers), Clark, No. 118.
- Leguminosites
  - atanensis Heer, Newberry, No. 519.
  - coronilloides Heer, Newberry, No. 519.
  - omphalobioides Lesq., Newberry, No. 519.
- Lepidechinus rarispinus, Jackson, No. 357.
- Lepidendron, McCalley, No. 459.
- Lepidesthidæ n. fam., Jackson, No. 357.
- Lepidesthes
  - colletti, Jackson, 357.
  - coreyi, Jackson, 357.
  - formosus, Jackson, 357.
  - wortheni n. sp., Jackson, 357.
- Lepiditta
  - alata, Matthew, No. 490.
  - auriculata, Matthew, No. 490.
  - curta, Matthew, No. 490.
- Lepidocentrus mulleri Schultze, Jackson, No. 357.
- Lepidocidaris squamosus, Jackson, 357.
- Lepidocoleus
  - jamesi, Clarke, No. 125.
  - polypetalus n. sp., Clarke, No. 125.
  - sarlei n, sp., Clarke, No. 125.
- Leptograptus macrotheca n. sp., Gurley, No. 265.
- Leucozonia biplicata, Harris, No. 279.
- Levibuccinum lineatum, Harris, No. 279.
- Levifusus
  - branneri Harris, Harris, No. 280.
  - dolei n. sp., Harris, No. 279.
  - hubbardi n. sp., Harris, No. 279.
  - pagoda var., Harris, No. 279.
  - suteri n. sp., Aldrich, No. 11.
  - suteri, Harris, No. 279.
  - trabeatus Con., Aldrich, No. 11.
  - trabeatus Con., Harris, No. 280.
  - trabeatus var., Harris, No. 279.
- Lima multilineata n. sp., Stanton, No. 648.
  - multiradiata Gabb, Stanton, No. 647.
- Lingula howleyi n. sp., Matthew, No. 487.
- Lingulella
  - roberti n. sp., Matthew, No. 487.
  - selwyni n. sp., Matthew, No. 487.
- Lingulepis acuminata Conrad, Matthew, No. 487.
- Lingulobolus n. gen., Matthew, No. 487.
  - affinis Bill. sp., Matthew, No. 487.
    - var. cuneata, Matthew, No. 487.
- Liopteria
  - subovata n. sp., Miller and Gurley, 511.
  - speciosa n. sp., Miller and Gurley, No. 511.
- Liriodendron Linnæus, Newberry, No. 519.
  - oblongifolium Newb., Newberry, No. 519.
  - quercifolium Newb., Newberry, No, 519.
- Liriodendropsis n. gen., Newberry, No. 519.

Paleontology—Continued.

Genera and species described—Continued.

- Liriodendropsis angustifolia n. sp., Newberry, No. 519.
  - simplex Newb., Newberry, No. 519.
- Lissopleura n. gen., Whitfield, No. 753.
- Lithodomus
  - claibornensis Con., Aldrich, No. 11.
  - gainesensis n. sp., Harris, No. 279.
- Litoceras potosina n. sp., Aguilera, No. 10.
- Lituites
  - robertsoni, Whitfield, No. 752.
  - undatus var. occidentalis, Whitfield, No. 752.
- Lonchocarpus novæ-cæsareæ n. sp., Hollick, No. 331.
- Lucina
  - anodonta, Say, No. 590.
  - aquiana n. sp., Clark, Nos. 118, 122.
  - claytonia n. sp., Harris. No. 279.
  - coetol n. sp., Aguilera, No. 10.
  - colusaensis n. sp., Stanton, No. 648.
  - contracta, Say, No. 599.
  - cribraria, Say, No. 599.
  - dartoni n. sp., Clark, Nos. 118, 122.
  - divaricata, Say, No. 599.
  - fortidentalis n. sp., Harris, No. 279.
  - greggi n. sp., Harris, No. 280.
  - ovalis n. sp., Stanton, No. 648.
  - potosina n. sp., Aguilera, No. 10.
  - subobliqua, Say, No. 599.
  - turneri n. sp., Stanton, No. 647.
  - uhleri n. sp., Clark, Nos. 118, 122.
  - whitei n. sp., Clark, Nos. 118, 122.
- Lunatia
  - hornii Gabb, Stanton, No. 647.
  - marylandica Conrad, Clark, No. 118.
- Lunulicardium
  - grande n. sp., Miller and Gurley, No. 511.
  - retrorsum n. sp., Miller and Gurley, No. 511.
- Lutra thoadsii n. sp., Cope, No. 136.
- Lygodium neuropteroides Lesquereux, Dawson, No. 176.
- Lyria wilcoxiana, Harris, No. 279.
- Lyrtoceras batesi (Trask), Stanton, No. 648.
  - jukesii Sharpe, Whiteaves, No. 748.
- Maclurea bigsbyi, Whitfield, No. 752.
- Macrodon
  - blairi n. sp., Miller and Gurley, No. 511.
  - facetus n. sp., Miller and Gurley, No. 511.
  - pettisensis n. sp., Miller and Gurley, No. 511.
- Mactra
  - literalis, Harris, No. 278.
  - mississippiensis Con. var., Harris, No. 280.
- Magnolia
  - alternans Heer (?), Newberry, No. 519.
  - auriculata n. sp., Newberry, No. 519.
  - glaucoides n. sp., Newberry, No. 519.
  - lacoeana Lesq., Newberry, No. 519.
  - longifolia n. sp., Newberry, No. 519.
  - longipes n. sp., Newberry, No. 519.
  - woodbridgensis Hollick n. sp., Newberry, No. 519.
- Mangilia (Pleurotomella) bellistriata n. sp., Clark, Nos. 118, 122.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Manicaria sp., Dawson, No. 176.
  - Manicina pliocenica n. sp., Gane, No. 235.
  - Margarita brownii n. sp., Cragin, No. 142.
  - Martesia dalliana n. sp., Harris, No. 279.
  - Mazzalina
    - impressa, Harris, No. 279.
    - inaurata var. Con., Harris, No. 280.
  - Megalonyx wheatleyi Cope, Cope, No. 136.
  - Megistocrinus indianensis n. sp., Miller and Gurley, 508.
  - Melanopsis planoidea n. sp., Aldrich, No. 11.
  - Melocrinus nodosus, Whitfield, No. 752.
  - Melonites
    - giganteus n. sp., Jackson, No. 357.
    - septanarius n. sp., Jackson, No. 357.
    - multiporus, Jackson and Jagger, No. 358.
  - Menispermites
    - borealis Heer (?), Newberry, No. 519.
    - wardianus Hollick, n. sp., Newberry, No. 519.
  - Mephitis
    - fissidens n. sp., Cope, No. 136.
    - orthostichus n. sp., Cope, No. 136.
  - Meretrix
    - cornelli n. sp., Harris, No. 277.
    - mortoniopsis var. Hp., Harris, No. 280.
    - pearlensis n. sp., Harris, No. 280.
    - perovata var. aldrichi n. var., Harris, No. 277.
    - ripleyana, Harris, No. 279.
    - sp., Harris, No. 279.
    - sp., Stanton, No. 647.
  - Mesalia
    - alabamiensis, Harris, No. 279.
    - pleboides n. sp., Vaughan, No. 698.
    - pumila, Harris, No. 279.
      - var. allentonensis, Harris, No. 279.
      - var. hardemanensis, Harris, No. 279.
      - var. wilcoxiana, Harris, No. 279.
    - vetusta Con., Harris, No. 277.
    - watsonensis n. sp., Harris, No. 279.
    - (?), Harris, No. 279.
  - Mesocetus siphunculus, Cope, No. 135.
  - Mesodon abrasus n. sp., Cragin, No. 143.
  - Mesohippus
    - bairdi, Farr, No. 218.
    - copei, Farr, No. 218.
    - intermedius, Farr, No. 218.
  - Metopocetus durinasus n. gen. et sp., Cope, No. 135.
  - Mezoneurum bridgetonense n. sp., Hollick, No. 331.
  - Microdiscus Emmons, Matthew, No, 490.
    - dawsoni Hartt, Matthew, No. 490.
    - precursor, Matthew, No. 490.
    - punctellus Hartt, Matthew, No. 490.
    - punctatus Salter, Matthew, No. 490.
    - schucherti n. sp., Matthew, Nos. 486, 490.
  - Microtus diluvianus n. sp., Cope, No. 136.
  - Microzamia gibba (Reuss) Corda, Newberry, No. 519.
  - Mitra
    - hatchetigbeensis?, Harris, No. 279.
    - subpontis n. sp., Harris, No. 279.
  - Mitra marylandica n. sp., Clark, Nos. 118, 122.
    - sp., Clark, No. 118.
  - Modiola
    - alabamensis n. sp., Aldrich, No. 11.
    - major Gabb, Stanton, No. 648.
    - potomacensis n. sp., Clark, Nos. 118, 122.
    - saffordi, Harris, No. 279.
    - subpontis n. sp., Harris, No. 279.
  - Modiolopsis
    - plana, Whitfield, No. 752.
    - (?) superba, Whitfield, No. 752.
  - Monoceras jacksonium n. sp., Harris, No. 280.
  - Monoclonius, Marsh, No. 480.
  - Monotrypa rectimuralis Ulrich, James, No. 360.
  - Moriconia cyclotoxon Deb. and Ett., Newberry, No. 519.
  - Morosaurus, Marsh, Nos. 480, 481.
  - Monticulipora
    - (Constellaria) Dana, James, No. 360.
      - polystomella Nicholson, James, No. 360.
      - parva Ulrich, James, No. 360.
    - (Dekayia) Edw. and H., James, No. 360.
      - aspera Edw. and H., James, No. 360.
      - hospitalis var. neglecta James, James, No. 360.
      - maculata James, James, No. 360.
      - pelliculata Ulrich, James, No. 360.
    - (Fistulipora) McCoy, James, No. 360.
      - granulifera (Ulrich), James, No. 360.
      - milfordensis James, James, No. 360.
      - nicholsoni James, James, No. 360.
      - oweni James, James, No. 360.
      - rustica Ulrich, James, No. 360.
      - subcylindrica U. P. James, James, No. 360.
  - Murchisonia indianensis n. sp., Miller and Gurley, No. 511.
  - Murex
    - elegantissimus n. sp., Aldrich, No. 11.
    - marksi Harris, Harris, No. 280.
    - merulus Con., Harris, No. 280.
    - (Pteronotus) matthewsensis, Harris, No. 279.
  - Myliobatis copeanus n. sp., Clark, Nos. 118, 122.
  - Myconcha americana n. sp., Stanton, No. 648.
  - Myrica
    - acuta Hollick n. sp., Newberry, No. 519.
    - cinnamonifolia n. sp., Newberry, No. 519.
    - emarginata Heer (?), Newberry, No. 519.
    - fenestrata n. sp., Newberry, No. 519.
    - newberryana Hollick, n. sp., Newberry, No. 519.
    - parvula Heer, Newberry, No. 519.
    - raritanensis Hollick n. sp., Newberry, No. 519.
  - Myrsine borealis Heer, Newberry, No. 519.
    - elongata n. sp., Newberry, No. 519.
    - oblongata Hollick n. sp., Newberry, No. 519.
  - Mytilarca jessieæ n. sp., Miller and Gurley, No. 511.
  - Nanosaurus, Marsh, No. 480.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Nassa
    - galvestonensis n. sp., Harris, No. 278.
    - trivigalvesta n. sp., Harris, No. 278.
  - Natica
    - cliftonensis n. sp., Clark, Nos. 118, 122.
    - eminula, Harris, No. 279.
    - limula, Harris, No. 279.
    - mediavia n. sp., Harris, Nos. 279, 280.
    - perspecta, Harris, No. 279.
    - reversa, Harris, No. 279.
    - saffordi n. sp., Harris, No. 279.
    - (Girodes) alabamiensis, Harris, No. 279.
    - (Polinices) onusta, Harris, No. 279.
  - Nautilus
    - burkarti n. sp., Aguilera, No. 10.
    - ponderosus, Keyes, No. 399.
    - washitanus n. sp., Cragin, No. 142.
    - sp., Clark, No. 118.
  - Nematophyton crassum, Penhallow, No. 542.
  - Neptunea constricta, Harris, No. 279.
  - Nerinæa Dispar (?) Gabb, Whiteaves, No. 748.
  - Neritoma marcouana n. sp., Cragin, No. 142.
  - Neuropteris civica n. sp., Dawson, No. 176.
  - Niso sp., Vaughan, No. 698.
  - Nodisaurus, Marsh, No. 480.
  - Nodosaria
    - polygona Reuss, Bagg, No. 21.
    - zippei Reuss, Bagg, No. 21.
  - Nucula
    - chickasaensis n. sp., Cragin, No. 142.
    - concentrica, Say, No. 599.
    - gabbi n. sp., Stanton, No. 648.
    - hornbyensis nom. prov., Whiteaves, No. 748.
    - lævis, Say, No. 599.
    - magnifica Conrad, Clark, No. 118.
    - mediavia n. sp., Harris, No. 279.
    - obliqua, Say, No. 599.
    - ovula, Harris, No. 279.
    - richardsoni n. sp., Whiteaves, No. 748.
    - storrsi n. sp., Stanton, No. 648.
  - Odontaspis elegans (Agassiz), Clark, No. 118.
  - Olcostephanus
    - af. portlandicus de Loriol, Aguilera, No. 10.
    - potosinus n. sp., Aguilera, No. 10.
    - (Polyptychites) trichotomus n. sp., Stanton, No. 648.
    - (Simbirskites) mutabilis n. sp., Stanton, No. 648.
  - Oldhamia fruticosa Hall, Whitfield, No. 752.
  - Oligoporus
    - coreyi, Jackson, No. 357.
    - danæ, Jackson, No. 357.
    - missouriensis n. sp., Jackson, No. 357.
  - Oliva reticularis, Harris, No. 278.
  - Olivella
    - galvestonensis n. sp., Harris, No. 278.
    - mediavia n. sp., Harris, No. 279.
    - subtexana n. sp., Harris, No. 278.
  - Oncoceras
    - abruptum, Whitfield, No. 752.
    - alceus, Whitfield, No. 752.
    - lycus, Whitfield, No. 752.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Oncoceras pandion, Whitfield, No. 752.
    - plebeium, Whitfield, No. 752.
  - Ophioglossum granulatum Heer, Newberry, No. 519.
  - Opis californica n. sp., Stanton, No. 648.
  - Ornithomimus, Marsh, Nos. 480, 481.
  - Ornithostoma, Williston, No. 760.
  - Orthoceras
    - caldwellensis n. sp., Miller and Gurley, No. 511.
    - fauslerensis, Keyes, No. 399.
    - planoconvexum, Whitfield, No. 752.
    - sociale, Whitfield, No. 752.
  - Osmotherium spelæum, Cope, No. 136.
  - Ostrea
    - compressirostra, Say, No. 599.
    - compressirostra Say, Clark, No. 118.
    - convexa, Say, No. 599.
    - cretacea Morton, Aldrich, No. 11.
    - crenulimarginata, Harris, No. 279.
    - falco, n. sp., Dall, No. 158.
    - podagrina n. sp., Dall, No. 158.
    - pulaskensis, Harris, No. 279.
    - sellæformis Conrad, Clark, No. 118.
    - sp., Clark, No. 118.
    - sp., Stanton, No. 648.
  - Otocoelus testudineus Cope, Cope, No. 137.
  - Otoliths, Clark, No. 118.
  - Oxyrhina hastalis Agassiz, Clark, No. 118.
  - Pachydiscus haradai Jimbo, Whiteaves, No. 748.
    - sp. ?, Whiteaves, No. 747.
  - Palæanthus (Williamsonia) problematicus n. sp., Newberry, No. 519.
  - Palæaster Hall, James, No. 360.
    - antiqua (Locke), James, No. 360.
    - antiqua (Troost), James, No. 360.
    - clarkanus S. A. Miller, James, No. 360.
    - exculptus S. A. Miller, James, No. 360.
    - dubius Miller and Dyer, James, No. 360.
    - dyeri Meek, James, No. 360.
    - finei Ulrich, James, No. 360.
    - granulosus Hall, James, No. 360.
    - incomptus Meek, James, No. 360.
    - jamesii Dana, James, No. 360.
    - longibrachiatus S. A. Miller, James, No. 360.
    - magnificus S. A. Miller, James, No. 360.
    - miamiensis S. A. Miller, James, No. 360.
    - shæfferi Hall, James, No. 360.
    - simplex Miller and Dyer, James, No. 360.
    - speciosa (Miller and Dyer), James, No. 360.
    - spinulosus Miller and Dyer, James, No. 360.
  - Palæechinus gigas, Jackson, No. 357.
  - Palæocorystes harveyi n. sp., Woodward, No. 774.
  - Palæosolen occidentalis n. sp., Miller and Gurley, No. 511.
  - Palæospondylus, Gill, No. 242.
  - Palasterina (McCoy) Salter, James, No. 360.
  - Paleohillia, Holm, No. 335.
  - Paliurus ovalis Dn., Newberry, No. 519.

Paleontology—Continued.

Genera and species described—Continued.

- Panopæa
  - elongata Conrad, Clark, No. 118.
  - porrectoides var. Ald., Harris, No. 280.
  - reflexa, Say, No. 599.
- Papillina
  - papillata Con., Harris, No. 280.
  - staminea Con. var., Harris, No. 280.
- Paracyathus (?) clarkeanus n. sp., Vaughan, Nos. 689, 700.
  - vaughani n. sp., Gane, No. 235.
- Paralegoceras Hyatt, Smith, No. 628.
  - iowense Meek and Worthen, Smith, No. 628.
- Passiflora antiqua n. sp., Newberry, No. 519.
- Pecten
  - alabamensis, Harris, No. 279.
  - californicus Gabb ?, Stanton, No. 648.
  - choctavensis n. sp., Aldrich, No. 11.
  - clarkeanus n. sp., Aldrich, No. 11.
  - clintonius, Say, No. 599.
  - complexicosta Gabb, Stanton, No. 648.
  - inconspicuus n. sp., Cragin, No. 142.
  - jeffersonius, Say, No. 599.
  - johnsoni n. sp., Clark, Nos. 118, 122.
  - madisonius, Say, No. 599.
  - rogersi n. sp., Clark, No. 118, 122.
  - septenarius, Say, No. 599.
  - sp., Clark, No. 118.
  - sp., Harris, No. 278.
  - sp., Stanton, No. 648.
  - sp. ?, Whiteaves, No. 747.
- Pectunculus, Harris, No. 279.
  - idoneus Conrad, Clark, No. 118.
  - (?) ovatus n. sp., Stanton, No. 648.
  - subovatus, Say, No. 599.
  - veatchi (Gabb), Stanton, No. 647.
    - var. major n. var., Stanton, No. 647.
- Pelycictis lobulatus n. gen et. sp., Cope, No. 136.
- Pentacrinus caput, Say, No. 599.
- Pentamerus
  - corrugatus n. var., Weller and Davison, No. 735.
  - oblongus Sowerby var., Weller and Davison, No. 735.
- Pentremite, Say, No. 599.
- Periploma butleriana n. sp., Aldrich, No. 11.
  - sp., Harris, No. 280.
- Perisphinctes
  - alamitosensis n. sp., Aguilera, No. 10.
  - cf. balderus Oppel, Aguilera, No. 10.
  - colubrinus (Reinecke), Aguilera, No. 10.
  - cf. colubrinus (Reinecke) Aguilera, No. 10.
  - dolfusi n. sp., Aguilera, No. 10.
  - felixi n. sp., Aguilera, No. 10.
  - flexicostatus n. sp., Aguilera, No. 10.
  - leuri n. sp., Aguilera, No. 10.
  - lenki n. sp., Aguilera, No. 10.
  - mazapilensis n. sp., Aguilera, No. 10.
  - monserrati n. sp., Aguilera, No. 10.
  - potosinus n. sp., Aguilera, No. 10.
  - pouzinensis Toucas, Aguilera, No. 10.
  - af. pouzinensis Toucas, Aguilera, No. 10.
  - transitorius ? Oppel, Aguilera, No. 10.

Paleontology—Continued.

Genera and species described—Continued.

- Perisoonia
  - lesquereuxii Knowlton, Newberry, No. 519.
  - spatulata Hollick n. sp., Newberry, No. 519.
- Perisphinctes sp. ?, Aguilera, No. 10.
- Perissolax blakei (Conrad), Stanton, No. 647.
- Perna
  - cornelliana n. sp., Harris, No. 279.
  - torta, Say, No. 599.
- Petalocrinus n. gen., Weller and Davison, No. 735.
  - (?) major n. sp., Weller and Davison, No. 735.
  - mirabilis n. sp., Weller and Davison, No. 735.
- Petalodus alleghaniensis Leidy, Eastman, No. 187.
- Petigopora gregaria Ulrich, James, No. 360.
- Petraster Billings, James, No. 360.
  - wilberanus Meek, James, No. 360.
- Phegopteris grothiana Heer (?), Newberry, No. 519.
- Phillipsia
  - cliftonensis Shumard, Smith, No. 628.
  - (Griffithides) ornata Vogdes, Smith, No. 628.
- Pholadomya
  - marylandica Conrad, Clark, No. 118.
  - mauryi n. sp., Harris, No. 279.
  - ragsdalei n. sp., Cragin, No. 142.
- Pholas
  - ovalis Say, No. 599.
  - (?) petrosa Conrad, Clark, No. 118.
- Pholidocidaris meeki n. sp., Jackson, No. 357.
- Phos
  - galvestonensis n. sp., Harris, No. 278.
  - johnsoni n. sp., Vaughan, No. 698.
- Phryganea ejecta n. sp., Scudder, No. 607.
- Phycograptus n. gen., Gurley, No. 265.
  - brachymera n. sp., Gurley, No. 265.
- Phyllangia floridana n. sp., Gane, No. 235.
- Phyllites
  - ellipticus n. sp., Newberry, No. 519.
  - obscura Hollick n. sp., Newberry, No. 519.
  - orbicularis n. sp., Newberry, No. 519.
  - undulatus n. sp., Newberry, No. 519.
- Phylloceras
  - indra (var.), Whiteaves, No. 748.
  - knoxvillensis n. sp., Stanton, No. 648.
  - cf. velledoe (Michelin), Aguilera, No. 10.
- Physetocrinus sampsoni n. sp., Miller and Gurley, No. 510.
- Placenticeras fallax n. sp., Aguilera, No. 10.
- Plagiolophus vancouverensis n. sp., Woodward, No. 774.
- Planera knowltoniana Hollick n. sp., Newberry, No. 519.
- Platycrinus
  - concinnulus n. sp., Miller and Gurley, No. 509.
  - douglassi n. sp., Miller and Gurley, No. 510.

Paleontology—Continued.

Genera and species described—Continued.

- Platycrinus formosus, var. approximatus n. var., Miller and Gurley, No. 509.
  - hodgsoni n. sp., Miller and Gurley, No. 508.
  - illinoisensis n. sp., Miller and Gurley, No. 508.
  - subscitulus n. sp., Miller and Gurley, No. 509.
- Pleisiochelys belviderensis n. sp., Cragin, No. 143.
- Plesiosaurus mudgei n. sp., Cragin, No. 143.
- Pleurocœlus, Marsh, No. 480.
- Pleuromya inconstans n. sp., Aguilera, No. 10.
- Pleurotoma
  - harrisi n. sp., Clark, Nos. 118, 122.
  - langdoni n. sp., Aldrich, No. 11.
  - longipersa n. sp., Harris, No. 279.
  - mediavia n. sp., Harris, No. 279.
  - nasuta Whitf., Harris, No. 280.
  - ostrarupis, Harris, Nos. 279, 280.
  - persa, Harris, No. 279.
  - servatoidea n. sp., Aldrich, No. 11.
  - silicata n. sp., Aldrich, No. 11.
  - vaughani, var., Harris, No. 280.
  - sp., Harris, No. 279.
  - (Ancistrosyrinx) columbaria Ald., Harris, No. 280.
  - (Cythara) galvestonensis n. sp., Harris, No. 278.
    - (?) leania n. sp., Harris, Nos. 279, 280.
  - (Drillia) quadricentennialis n. sp., Harris, No. 278.
    - quercollis, Harris, No. 279.
  - (Pleurotomella ?) anacona, Harris, No. 279.
  - (Surcula) adeona, Harris, No. 279.
- Pleurotomaria
  - crotaloides Morton, Pilsbry, No. 545.
  - lerchi n. sp., Vaughan, No. 698.
  - ludoviciana n. sp., Vaughan, No. 698.
  - nasoni, Whitfield, No. 752.
  - niota, Whitfield, No. 752.
  - providencis, Broadhead, No. 81.
  - sancti-mauritii n. sp., Vaughan, No. 698.
  - semele, Whitfield, No. 752.
  - shaleri n. sp., Vaughan, No. 698.
  - stantoni n. sp., Vaughan, No. 698.
  - sp., Harris, No. 279.
  - sp., Stanton, No. 648.
- Pleurotomella whitfieldi, Harris, No. 279.
- Plicatula
  - marginata, Say, No. 599.
  - ostreiformis n. sp., Stanton, No. 647.
  - (?) Harris, No. 279.
- Plumulites Barrande, Matthew, No. 490.
  - manuelensis n. sp., Matthew, No. 490.
- Pinna n. sp., Stanton, No. 648.
- Pinus sp. ?, Newberry, No. 519.
- Pisania (Tritonidea) johnsoni n. sp., Aldrich, No. 11.
- Pithecanthropus erectus, Marsh, No. 475.
- Pityoxylon pealei n. sp., Knowlton, No. 420.
- Podocrates vancouverensis n. sp., Whiteaves, No. 748.

Paleontology—Continued.

Genera and species described—Continued.

- Podozamites
  - acuminatus Hollick n. sp., Newberry, No. 519.
  - angustifolius (Eichw.) Schimp, Newberry No. 519.
  - marginatus Heer (?), Newberry, No. 519.
- Podurites saltator n. sp., Matthew, No. 488.
- Populus
  - (?) apiculata n. sp., Newberry, No. 519.
  - balsaminoides Goeppert, Dawson, No. 176.
  - rotundifolia Newberry, Dawson, No. 176.
- Posidonomya lasallensis n. sp., Miller and Gurley, No. 511.
- Poterioceras jerseyense n. sp., Miller and Gurley, No. 511.
- Poteriocrinus
  - albersi n. sp., Miller and Gurley, No. 509.
  - arrectarius n. sp., Miller and Gurley, No. 509.
  - bozemanensis n. sp., Miller and Gurley, No. 510.
  - douglassi n. sp., Miller and Gurley, No. 510.
  - labyrinthicus S. A. Miller, Miller and Gurley, No. 509.
  - lautus n. sp., Miller and Gurley, No. 509.
  - neglectus n. sp., Miller and Gurley, No. 509.
  - pulaskiensis n. sp., Miller and Gurley, No. 508.
- Primitia acadica, Matthew, No. 490.
- Pronorites Mojsisovics, Smith, No. 628.
  - cyclolobus Phillips, var. arkansiensis, Smith, No. 628.
  - præpermicus Karpinsky, Smith, No. 628.
  - sp. undet., Smith, No. 628.
- Prostostega gigas Cope, Wieband, No. 755.
- Protapirus
  - simplex W. and E., Hatcher, No. 283.
  - validus n. sp., Hatcher, No. 283.
- Protaster Forbes, James, No. 360.
  - (?) granuliferus Meek, James, No. 360.
  - miamiensis S. A. Miller, James, No. 360.
- Protasterina Ulrich, James, No. 360.
  - fimbriata Ulrich, James, No. 360.
  - flexuosa (Miller and Dyer), James, No. 360.
- Proteoides daphnogenoides Heer, Newberry, No. 519.
- Protocardia
  - nicolletti var., Harris, No. 279.
  - virginiana Conrad, Clark, No. 118.
  - virginiana ? Con., Harris, No. 280.
- Protophyllum obovatum n. sp., Newberry, No. 519.
- Protorohippus n. gen., Wortman, No. 781.
  - venticolus (Cope), Wortman, No. 781.
- Prunus (?) acutifolia n. sp., Newberry, No. 519.
- Pseudolivia
  - ostrarupis, Harris, No. 279.
    - var. pauper, Harris, No. 279.
  - scalina, Harris, No. 279.
  - unicarinata, Harris, No. 279.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Pseudolivia vetusta, Harris, Nos. 279, 280.
    - sp., Harris, No. 279.
  - Psittacotherium multifragum Cope, Wortman, No. 782.
  - Pteranodon, Marsh, No. 481.
  - Pteropurpura postii n. sp., Dall, No. 158.
  - Pulchellia mexicana n. sp., Aguilera, No. 10.
  - Pyramidella, Harris, No. 278.
  - Pyramimitra costata Lea, Aldrich, No. 11.
  - Pyropsis perula, Harris, Nos. 279, 280.
  - Pyropsis sp., Clark, No. 118.
  - Pyrula
    - juvenis, Harris, No. 279.
    - (Fusoficula) texana Har., Aldrich, No. 11.
  - Quercus
    - dentoni Lesquereux, Dawson, No. 176.
    - johnstrupi Heer (?), Newberry, No. 519.
  - Rafinesquina lata n. sp., Whiteaves, No. 750.
  - Rangia
    - cuneata var. galvestonensis n. var., Harris, No. 278.
    - (?) quadricentennialis n. sp., Harris, No 278.
  - Receptaculites de France. Whitfield, No. 752.
    - dixonensis n. sp., Miller and Gurley, No. 511.
    - fungosus, Whitfield, No. 752.
    - globularis, Whitfield, No. 752.
    - hemisphericus, Whitfield, No. 752.
    - infundibulum, Whitfield, No. 752.
    - oweni, Whitfield, No. 752.
  - Reniera (?), Merrill, No. 504.
  - Reteograptus geinitzianus Hall, Gurley, 265.
  - Retusa
    - chipolana n. sp., Dall, No. 158.
    - duplinensis n. sp., Dall, No. 158.
    - microtrema n. sp., Dall, No. 158.
    - quercinensis n. sp., Dall, No. 158.
    - (Cylichnina) decapitata n. sp., Dall, No. 158.
  - Rhacophyllites
    - (?) alamitosensis n. sp., Aguilera. No. 10.
    - calderoni n. sp., Aguilera, No. 10.
    - (?) disputabile n. sp., Aguilera, No. 10.
  - Rhamnites minor Hollick n. sp., Newberry, No. 519.
  - Rhegnopsis palæatlanticus Leidy, Cope, No. 135.
  - Rhodocrinus blairi n. sp., Miller and Gurley, 509.
  - Rhœchinus
    - burlingtonensis, Jackson, 357.
    - elegans, Jackson, 357.
    - gracilis, Jackson, 357.
  - Rhynchonella
    - lacunosa var. arolica Oppel, Aguilera, No. 10.
    - schucherti n. sp., Stanton, No. 648.
    - suciensis n. sp., Whiteaves, No. 748.
    - whitneyi Gabb, Stanton, No. 648.
  - Ringicula
    - butleriana n. sp., Aldrich, No. 11.
    - chipolana n. sp., Dall, No. 158.

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- *Genera and species described*—Continued.
  - Ringicula dalli n. sp., Clark, Nos. 118, 122.
    - semilimata n. sp., Dall, No. 158.
  - Rissoina
    - alabamensis n. sp., Aldrich, No. 11.
    - alabamensis Harris, No. 279.
  - Roudairia denisonensis n. sp., Cragin, No. 142.
  - Sabal campbellii Newberry, Dawson, No. 176.
  - Salix
    - inæqualis n. sp., Newberry, No. 519.
    - integra Goeppert, Dawson, No. 176.
    - membranacea Newb., Newberry, No. 519.
    - newberryana Hollick n. sp., Newberry, No. 519.
    - proteæfolia Lesq., Newberry, No. 519.
    - varians Goeppert, Dawson, No. 176.
    - sp. ?, Newberry, No. 519.
  - Sapotactites retusus Heer, Newberry, No. 519.
  - Sassafras
    - acutilobum Lesq., Newberry, No. 519.
    - hastatum n. sp., Newberry, No. 519.
    - progenitor n. sp., Newberry, No. 519.
  - Scala
    - galvestonensis n. sp., Harris, No. 278.
    - virginiana n. sp., Clark, Nos. 118, 122.
    - sp., Harris, No. 279.
  - Scaphander
    - alabamensis n. sp., Aldrich, No. 11.
    - langdoni n. sp., Dall, No. 158.
    - primus Ald., Aldrich, No. 11.
  - Scaphella showalteri, Harris, No. 279.
  - Scaphella sp., Harris, No. 279.
  - Scaphiocrinus notatus n. sp., Miller and Gurley, No. 509.
  - Schizodus
    - cuneatus Meek, Smith, No. 628.
    - sedaliensis n. sp., Miller and Gurley, No. 511.
    - wheeleri Swallow, Smith, No. 628.
  - Schloenbachia af. inflata (Sowerby), Aguilera, No. 10.
  - Sequoia
    - gracillima (Lesq.) Newb., Newberry, No. 519.
    - heterophylla Vel., Newberry, No. 519.
    - reichenbachi (Gein.) Heer (?), Newberry, No. 519.
  - Serpula granifera, Harris, No. 599.
  - Serpula sp., Clark, No. 118.
  - Sigaretus (Sigaticus) clarkeanus Ald., Aldrich, No. 11.
  - Sigmogomphius lecontei n. gen. et sp., Merriam, No. 493.
  - Sipho
    - erecta n. sp., Aldrich, No. 11.
    - ? erecta Ald., Harris, No. 280.
  - Siphonalia
    - jacksonia, n. sp., Harris, No. 280.
    - lineata n. sp., Stanton, No. 647.
  - Solariella
    - alabamensis, Harris, No. 279.
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    - alabamense, Harris, No. 279.
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  huppertzi var. Har., Harris, No. 280.
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  sp., Harris, No. 279.
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Solemya
  occidentalis n. sp., Stanton, No. 648.
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  spissus, Matthew, No. 487.
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Spiroplecta clarki n. sp., Bagg, Nos. 19, 20.
Spondylus fragilis n. sp., Stanton, No. 648.
Steganocrinus spergenensis n. sp., Miller and Gurley, No. 508.
Stegomus arcuatus n. gen. et sp., Marsh, No. 476.
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  concentrica, Matthew, No. 490.
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  crassicaulis n. sp., Gurley, No. 265.
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  ficus Gabb, Aldrich, No. 11.
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  (?) **mediavia** n. sp., Harris, No. 279.
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  hornii Gabb?, Stanton, No. 647.
  lignitica n. sp., Harris, No. 280.
  subæqualis n. sp., Cragin, No. 142.
  subtriangularis n. sp., Aldrich, No. 11.
  virginiana n. sp., Clark, Nos. 118, 122.
  williamsi n. sp., Clark, Nos. 118, 122.
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  alta, Whitfield, No. 752.
  inflata, Whitfield, No. 752.
  ovata, Whitfield, No. 752.
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  gabbi, Dall, No. 158.
  haitensis n. sp., Dall, No. 158.
  galvestonensis n. sp., Harris, No. 278.
  langdoni, Harris, No. 278.
  inornata n. sp., Dall, No. 158.
  sincera n. sp., Dall, No. 158.
  (**Acus**)
    amitra n. sp., Dall, No. 156.
    curvilineata n. sp., Dall, No. 158.
    curvilirata Conrad, Dall, No. 158.
    bipartita Sowerby, Dall, No. 158.
    chipolana n. sp., Dall, No. 158.
    dislocata var. **indenta** Conrad, Dall, No. 158.
    langdoni n. sp., Dall, No. 158.
    neglecta Emmons, Dall, No. 158.
  (**Hastula**) **houstonia** Harris, n. sp., Dall, No. 158.
Terebratula
  californica n. sp., Stanton, No. 648.
  plicata, Say, No. 599.
  cf. **zieteni** p. de Loriol, Aguilera, No. 10.
  sp., Aguilera, No. 10.
  sp., Stanton, No. 648.
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Teredo virginiana n. sp., Clark, Nos. 118, 122.
Tetragrapsus acanthonotus n. sp., Gurley, No. 265.
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  - bucco (Cope), Osborn, No. 527.
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  - curtum (Marsh), Osborn, No. 527.
  - dolichoceras (Scott and Osborn), Osborn, No. 527.
  - elatum (Marsh), Osborn, No. 527.
  - gigas (Marsh), Osborn, No. 527.
  - heloceras (Cope), Osborn, No. 527.
  - ingens (Marsh), Osborn, 527.
  - montanum (Marsh), Osborn, No. 527.
  - ophyras (Cope), Osborn, No. 527.
  - platyceras (Scott and Osborn), Osborn, No. 527.
  - ramosum n. sp., Osborn, No. 527.
  - robustum (Marsh), Osborn, No. 527.
  - selwynianus (Cope), Osborn, No. 527.
  - serotinum (Marsh), Osborn, No. 527.
  - tichoceras (Scott and Osborn), Osborn, No. 527.
  - torvum (Cope), Osborn, No. 527.
  - trigonoceras (Cope), Osborn, No. 527.
  - varians (Marsh), Osborn, No. 527.
- Tornatella bella (Conrad), Clark, No. 118.
- Tornatina
  - fischeri n. sp., Dall, No. 158.
  - incisula n. sp., Dall, No. 158.
  - myrmecoon, n. sp., Dall, No. 158.
  - persimilis n. sp., Dall, No. 158.
  - (Cylichnella) gabbi, Dall, No. 158.
    - ovum-lacerti Guppy, Dall, No. 158.
- Torosaurus, Marsh, No. 480.
- Triarthrus, Beecher, No. 48.
- Tricalycites
  - papyraceus n. sp., Newberry, No. 519.
  - striatus n. sp., Newberry, No. 519.
- Triceratops, Marsh, No. 480.
- Trionyx virginiana n. sp., Clark, Nos. 118, 122.
- Triton
  - (Ranularia) eocensis, Harris, Nos. 279, 280.
  - (Simpulum) showalteri, Harris, No. 279.
- Trophon morulus, Harris, No. 279.
- Tuba (Mathilda) clairbornensis Ald., Aldrich, No. 11.
- Turbinola acuticostata n. sp., Vaughan, No. 700.
- Turbo
  - colusaensis n. sp., Stanton, No. 648.
  - (?) humerosus n. sp., Stanton, No. 648.
  - morganensis n. sp., Stanton, No. 648.
  - paskentaensis n. sp., Stanton, No. 648.
  - trilineatus n. sp., Stanton, No. 648.
  - wilburensis n. sp., Stanton, No. 648.
- Turrilepas wrightiana, Clarke, No. 125.
- Turritella
  - alabamiensis, Harris, No. 279.
  - alcida n. sp., Dall, No. 158.
  - denisonensis n. sp., Cragin, No. 142.
  - humerosa Conrad, Clark, No. 118.
  - humerosa, Harris, No. 279.
  - infragranulata Gabb, Stanton, No. 647.
  - interna, Say, No. 599.
- Turritella mortoni Conrad, Clark, No. 118.
  - mortoni var. levicunea n. var., Harris, No. 279.
  - nerinexa, Harris, No. 279.
  - pachecoensis n. sp., Stanton, No. 647.
  - pleboia, Say, No. 599.
  - saffordi, Harris, No. 279.
  - subgrundifera Dall, Harris, No. 278.
  - tennesseensis, Harris, No. 279.
  - sp., Stanton No. 648.
- Umbonium
  - duplinense n. sp., Dall, No. 158.
  - undula n. sp., Dall, No. 158.
  - (Solariorbis) floridanum n. sp., Dall, No. 158.
- Umbraculum sp., Aldrich, No. 11.
- Unio
  - dockumensis n. sp., Simpson, No. 620.
  - dumblei n. sp., Simpson, No. 620.
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- Ursus haplodon n. sp., Cope, No. 136.
- Vasum humerosum, Vaughan, No. 698.
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- Venericardia
  - alticostata, Harris, No. 279.
  - granulata, Say, No. 599.
  - planicosta Lamarck, Clark, No. 118.
  - planicosta, Harris, No. 279.
    - var. smithi, Harris, No. 279.
- Venus deformis, Say, No. 599.
- Vermetus (Burtinella) cornejoi n. sp., Aguilera, No. 10.
- Vermentus sp., Clark, No. 118.
- Verticordia sp., Harris, No. 279.
- Viburnum integrifolium n. sp., Newberry, No. 519.
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- Voluta
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  - limopsis, Harris, No. 279.
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  - (Athleta) tuomeyi Conrad, Clark, No. 118.
- Volutithes sp., Clark, No. 118.
- Volvaria bulloides Lam., Aldrich, No. 11.
- Volvula sp., Harris, No. 278.
- Waldheimia catorcensis n. sp., Aguilera, No. 10.
- Widdringtonites
  - reichii (Ett.) Heer, Newberry, No. 519.
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- Williamsonia smockii n. sp., Newberry, No. 519.
- Xenophora sp., Harris, No. 279.
- Yoldia
  - corpulentoides n. sp., Aldrich, No. 11.
  - eborea, Harris, No. 279.
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[Bulletin 149.]

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"The publications of the Geological Survey shall consist of the annual report of operations, geological and economic maps illustrating the resources and classification of the lands, and reports upon general and economic geology and paleontology. The annual report of operations of the Geological Survey shall accompany the annual report of the Secretary of the Interior. All special memoirs and reports of said Survey shall be issued in uniform quarto series if deemed necessary by the Director, but otherwise in ordinary octavos. Three thousand copies of each shall be published for scientific exchanges and for sale at the price of publication; and all literary and cartographic materials received in exchange shall be the property of the United States and form a part of the library of the organization; and the money resulting from the sale of such publications shall be covered into the Treasury of the United States."

Except in those cases in which an extra number of any special memoir or report has been supplied to the Survey by resolution of Congress or has been ordered by the Secretary of the Interior, this office has no copies for gratuitous distribution.

ANNUAL REPORTS.

I. First Annual Report of the United States Geological Survey, by Clarence King. 1880. 8°. 79 pp. 1 map.—A preliminary report describing plan of organization and publications.

II. Second Annual Report of the United States Geological Survey, 1880-'81, by J. W. Powell. 1882. 8°. lv, 588 pp. 62 pl. 1 map.

III. Third Annual Report of the United States Geological Survey, 1881-'82, by J. W. Powell. 1883. 8°. xviii, 564 pp. 67 pl. and maps.

IV. Fourth Annual Report of the United States Geological Survey, 1882-'83, by J. W. Powell. 1884. 8°. xxxii, 473 pp. 85 pl. and maps.

V. Fifth Annual Report of the United States Geological Survey, 1883-'84, by J. W. Powell. 1885. 8°. xxxvi, 469 pp. 58 pl. and maps.

VI. Sixth Annual Report of the United States Geological Survey, 1884-'85, by J. W. Powell. 1885. 8°. xxix, 570 pp. 65 pl. and maps.

VII. Seventh Annual Report of the United States Geological Survey, 1885-'86, by J. W. Powell. 1888. 8°. xx. 656 pp. 71 pl. and maps.

VIII. Eighth Annual Report of the United States Geological Survey, 1886-'87, by J. W. Powell. 1889. 8°. 2 pt. xix, 474, xii pp. 53 pl. and maps; 1 p. l., 475-1063 pp. 54-76 pl. and maps.

IX. Ninth Annual Report of the United States Geological Survey, 1887-'88, by J. W. Powell. 1889. 8°. xiii, 717 pp. 88 pl. and maps.

X. Tenth Annual Report of the United States Geological Survey, 1888-'89, by J. W. Powell. 1890. 8°. 2 pt. xv, 774 pp. 98 pl. and maps; viii, 123 pp.

XI. Eleventh Annual Report of the United States Geological Survey, 1889-'90, by J. W. Powell. 1891. 8°. 2 pt. xv, 757 pp. 66 pl. and maps; ix, 351 pp. 30 pl.

XII. Twelfth Annual Report of the United States Geological Survey, 1890-'91, by J. W. Powell. 1891. 8°. 2 pt. xiii, 675 pp. 53 pl. and maps; xviii, 576 pp. 146 pl. and maps.

XIII. Thirteenth Annual Report of the United States Geological Survey, 1891-'92, by J. W. Powell. 1893. 8°. 3 pt. vii, 240 pp. 2 maps; x, 372 pp. 105 pl. and maps; xi, 486 pp. 77 pl. and maps.

XIV. Fourteenth Annual Report of the United States Geological Survey, 1892-'93, by J. W. Powell. 1893. 8°. 2 pt. vi, 321 pp. 1 pl.; xx, 597 pp. 74 pl.

XV. Fifteenth Annual Report of the United States Geological Survey, 1893-'94, by J. W. Powell. 1895. 8°. xiv, 755 pp. 48 pl.

XVI. Sixteenth Annual Report of the United States Geological Survey, 1894-'95, by Charles D. Walcott. 1895. (Part I, 1896.) 8°. 4 pt. xxii, 910 pp. 117 pl. and maps; xix, 598 pp. 43 pl. and maps; xv, 646 pp. 23 pl.; xix, 735 pp. 6 pl.

XVII. Seventeenth Annual Report of the United States Geological Survey, 1895-'96, by Charles D. Walcott. 1896. 8°. 3 pt. in 4 vol. xxii, 1076 pp. 67 pl. and maps; xxv, 864 pp. 113 pl. and maps; xxii, 542 pp. 8 pl. and maps; iii, 543-1058 pp. 5 pl.

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[Bulletin 149.]

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23	Nomini	Maryland. Virginia..	76° 30′–77°	38°–38° 30′	938	25
24	Three Forks......	Montana..	111°–112°	45°–46°	3,354	50

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28	Piedmont	Virginia Maryland West Va.	79°–79° 30′	39°–39° 30′	925	25
29	Nevada City:					
	Nevada City	California.	121° 00′ 25″–121° 03′ 45″	39° 13′ 50″–39° 17′ 16″	11.65	50
	Grass Valley	California.	121° 01′ 35″–121° 05′ 04″	39° 10′ 22″–39° 13′ 50″	12.09	
	Banner Hill	California.	120° 57′ 05″–121° 00′ 25″	39° 13′ 50″–39° 17′ 16″	11.65	
30	Yellowstone National Park: Gallatin Canyon Shoshone Lake	Wyoming.	110°–111°	44°–45°	3,412	75
31	Pyramid Peak	California.	120°–120° 30′	38° 30′–39°	932	25
32	Franklin	Virginia West Va.	79°–79° 30′	38° 30′–39°	932	25
33	Briceville	Tennessee	84°–84° 30′	36′–36° 30′	963	25
34	Buckhannon	West Va.	80°–80° 30′	38° 30–39	932	25
35	Gadsden	Alabama	86°–86° 30′	34°–34° 30′	986	25

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Mineral Resources of the United States, 1893, by David T. Day. 1894. 8°. viii, 810 pp. Price 50 cents.

On March 2, 1895, the following provision was included in an act of Congress:

"*Provided*, That hereafter the report of the mineral resources of the United States shall be issued as a part of the report of the Director of the Geological Survey."

In compliance with this legislation, the report Mineral Resources of the United States for the Calendar Year 1894 forms Parts III and IV of the Sixteenth Annual Report of the Survey, and Mineral Resources of the United States for the Calendar Year 1895 forms Part III of the Seventeenth Annual Report of the Survey.

The money received from the sale of these publications is deposited in the Treasury, and the Secretary of the Treasury declines to receive bank checks, drafts, or postage stamps; all remittances, therefore, must be by POSTAL NOTE or MONEY ORDER, made payable to the Director of the U. S. Geological Survey, or in CURRENCY, for the exact amount. Correspondence relating to the publications of the Survey should be addressed

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4

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UNITED STATES GEOLOGICAL SURVEY

CHARLES D. WALCOTT, DIRECTOR

BIBLIOGRAPHY AND INDEX

OF

NORTH AMERICAN GEOLOGY, PALEONTOLOGY, PETROLOGY, AND MINERALOGY

FOR

THE YEAR 1897

BY

FRED BOUGHTON WEEKS

WASHINGTON
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LETTER OF TRANSMITTAL.

Department of the Interior,
United States Geological Survey,
Division of Geology,
Washington, D. C., August 1, 1898.

Sir: I have the honor to transmit herewith the manuscript of a Bibliography and Index of North American Geology, Paleontology, Petrology, and Mineralogy for the Year 1897, and to request that it be published as a bulletin of the Survey.

Very respectfully,
F. B. Weeks.

Hon. Charles D. Walcott,
Director United States Geological Survey.

BIBLIOGRAPHY AND INDEX OF NORTH AMERICAN GEOLOGY, PALEONTOLOGY, PETROLOGY, AND MINERALOGY FOR THE YEAR 1897.

By **Fred Boughton Weeks.**

INTRODUCTION.

The method of preparing and arranging the material of the Bibliography and Index for 1897 is similar to that adopted for the previous publications on this subject (Bulletins Nos. 130, 135, 146, and 149). The geological papers printed in the Transactions of the American Institute of Mining Engineers, volume 27, were entered in Bulletin No. 149 (Bibliography and Index for 1896), although the publication bears the date 1897. These papers were printed and issued as separates in 1896, but without pagination or volume number. In order to make the bibliography complete for the calendar year these papers appear again in this bulletin. The same course has been followed with volume 28, which bears the date 1898. A few other publications, which bear the date 1898, are included for the same reason.

Bibliography.—The bibliography consists of full titles of separate papers, classified by authors; an abbreviated reference to the publication in which the paper is printed, and a brief summary of the contents, each paper being numbered for index reference. The extent of papers less than a single page in length is indicated as ½ p., 5 l. (lines).

Index.—The subject headings, their subdivisions and arrangement, are shown in the Classified Key to the Index. They comprise geographic, geologic, mineralogic, paleontologic, and petrologic subdivisions. Under Economic Geology is given a list of useful minerals and ores described in publications examined; under Mineralogy, a list of minerals described in such publications; under Paleontology, a list of genera and species of fossils therein described, and under Petrology, a list of rocks described, reference being made in each case, by author's name and number of article in the Bibliography, to the paper in which the fossil, mineral, or rock is described. The Index has been enlarged by the addition of the names of all geological subdivisions that are described in the publications examined. They are not grouped together, but occur in the regular alphabetical order.

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See Adams (F. D.), Barlow (A. E.), and Ells (R. W.), No. 7.

40 —— and **Ferrier** (W. F.). On the relations and structure of certain granites and associated arkoses of Lake Temiscaming, Canada.
Brit. Assoc. Adv. Sci., Rept. 1897, pp. 659-660, 1898.
Describes the microscopic characters and relations of the rocks.

41 **Barrell** (Robert W.). The mineral formation of the Golden Leaf mines [Montana].

Eng. and Mg. Jour., vol. lxiv, p. 64, 1897.

Describes the geologic features of the region and the occurrence of gold and silver.

42 **Barton** (George H.). Glacial observations in the Umanak district, Greenland.

Tech. Quart., vol. x, pp. 213–244, figs. 1–27, 1897. Review by W. U[pham], Am. Geol., vol. xx, pp. 329–330, 1897.

Describes the glacial features of the region.

43 **Bascom** (Florence). Aporhyolites of South Mountain, Pennsylvania.

Geol. Soc. Am., Bull., vol. viii, pp. 393–396, 1897.

Describes the topography of the region and the petrographic structure of the aporhyolites.

44 —— The relations of the streams in the neighborhood of Philadelphia to the Bryn Mawr gravel.

Am. Geol., vol. xix, pp. 50–57, 1897.

Gives a sketch of the geologic history of the region and discusses the evidence of the stream erosion as indicating the age of the Bryn Mawr gravel.

45 —— [Review of "The geology of the Fox Islands, Maine, a contribution to the study of old volcanics," by George Otis Smith].

Am. Geol., vol. xix, pp. 214–219, 1897.

46 —— The ancient volcanic rocks of South Mountain, Pennsylvania.

Review by N. H. W[inchell], Am. Geol., vol. xix, pp. 139–140, 1897.

Review by J. P. Iddings, Jour. of Geol., vol. v, pp. 213–216, 1897.

47 **Bayley** (William Shirley). A summary of progress in Petrography in 1896.

Waterville, Me., 1897.

48 —— **Van Hise** (C. R.) and. The Marquette iron-bearing district of Michigan. With atlas.

See Van Hise (C. R.) and Bayley (W. S.), No. 648.

49 **Bayley** (W. S.). See **Van Hise** (C. R.) and **Bayley** (W. S.), No. 648.

50 **Beals** (William, jr.). The building stones of New England.

Stone, vol. xiv, pp. 545–567, 10 pls., vol. xv, pp. 1–7, 213-223, 9 pls., 1897.

Describes the character and occurrence of New England building stones.

51 **Becker** (George F.). Reconnoissance of the gold fields of southern Alaska, with some notes on general geology.

U. S. Geol. Surv., 18th Ann. Rept., Pt. III, pp. 7–86, pls. i–xxxi, figs. 1–6, 1898.

Includes notes on some igneous rocks and on the glacial features and volcanic phenomena of the region. Describes the occurrence and character of the auriferous deposits and veins.

52 **Becker** (George F.). Witwatersrand banket, with notes on other gold-bearing pudding stones.

U. S. Geol. Surv., 18th Ann. Rept., Pt. V, pp. 153–184, pl. i, fig. 1, 1897.

Describes the occurrence of gold on the Witwatersrand and the occurrence of auriferous conglomerates in various parts of the United States.

53 —— Some queries on rock differentiation.

Am. Jour. Sci., 4th ser., vol. iii, pp. 21–40, 1897. Review by C. F. Tolman, jr., Jour. of Geol., vol. v, pp. 393–398, 1897.

Discusses the hypotheses of rock differentiation from homogeneous magmas of great volume.

54 —— Computing diffusion.

Am. Jour. Sci., 4th ser., vol. iii, pp. 280–286, 1897.

Describes methods and gives tables for computing diffusive phenomena.

55 —— Fractional crystallization of rocks.

Am. Jour. Sci., 4th ser., vol. iv, pp. 257–261, fig. 1, 1897.

Describes the solidification of material in certain dikes and laccolites, and discusses its bearing on the theory of magmatic segregation or differentiation.

56 —— Lewis on the diamond.

Science, new ser., vol. vi, pp. 664–667, 1897.

Discusses the paper by George F. Kunz on the genesis of the diamond and review of Prof. Lewis's papers on the "Genesis and matrix of the diamond."

57 **Beecher** (Charles E.). Outline of a natural classification of the trilobites.

Am. Jour. Sci., 4th ser., vol. iii, pp. 89–106, and 181–207, pl. iii, 1897.

Reviews previous classifications and describes the principles and application of a natural classification. Gives diagnoses of the orders and families and a list of the genera.

58 —— Morphology of the brachia.

U. S. Geol. Surv., Bull. No. 87, pp. 105–112, figs. 2–6, 1897.

Describes the different stages of development.

59 —— [Review of "Synopsis of American fossil Brachiopoda," by Charles Schuchert.]

Am. Nat., vol. xxxi, pp. 1053–1055, 1897.

60 —— See **Kingsley** (J. S.), No. 337.

61 **Beede** (J. W.), **Haworth** (E.) and. The McPherson Equus beds [Kansas].

See Haworth (E.) and Beede (J. W.), No. 268.

62 **Bell** (Robert). Evidence of northeasterly differential rising of the land along Bell River [Canada].

Geol. Am., Bull., vol. viii, pp. 241–250, pls. 23–24, 1897.

Describes the characters of the drainage and its bearing on the evidence of an earth movement.

63 **Berkey** (C. P.). Chemical analysis of the Fisher meteorite.

Am. Geol., vol. xx, pp. 317-318, 1897.

Describes its mineralogic and chemical characters.

64 —— Geology of the St. Croix Dalles [Minnesota-Wisconsin].

Am. Geol., vol. xx, pp. 345-383, pls. xx-xxii, 1897.

Describes the physiographic features, the glacial geology, the lithologic characters and distribution of the Cambrian subdivisions, and the characters of the igneous rocks. Presents a geological and topographical map of the region.

65 **Beyer** (Samuel Walker). The Sioux quartzite and certain associated rocks.

Iowa Geol. Surv., vol. vi, pp. 69-112, figs. 24-28 and geologic map, 1897. Published in 1896.

Describes the occurrence of Niobrara chalk, the character of the Sioux quartzite and slate, the petrographic characters of the olivine diabase, quartzite, and slate, and discusses their origin.

66 —— Evidence of a sub-Aftonian till sheet in northeastern Iowa.

Iowa Acad. Sci., Proc, vol. iv, pp. 58-62, pls. ii-iii, 1897.

Discusses the evidence as to the line separating the various stages of the ice sheet in this region.

67 **Bibbins** (Arthur), **Clark** (W. B.) and. The stratigraphy of the Potomac group in Maryland.

See Clark (W. B.) and Bibbins (A.), No. 130.

68 **Blake** (William P.). Gold in granite and plutonic rocks.

Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. 290-298, 1897.

Describes the occurrence of gold in Arizona, California, and South Dakota.

69 —— The Fortuna gold mine, Arizona.

Eng. and Mg. Jour., vol. lxiii, pp. 664-665, 1897.

Describes the geologic occurrence and character of the ore body.

70 **Blandy** (John F.). An Arizona copper deposit.

Eng. and Mg. Jour., vol. lxiv, p. 97, 1897.

Describes the occurrence of copper near the rim of the Grand Canyon of the Colorado.

71 **Blatchley** (W. S.). The petroleum industry in Indiana.

Ind. Dept. Geol. and Nat. Res., 21st Ann. Rept., pp. 27-96, with map, 1897.

Describes the origin and occurrence of petroleum in Indiana, and gives local details, accompanied by map of productive area in northeastern Indiana.

72 —— Indiana caves and their fauna.

Ind. Dept. Geol. and Nat. Res., 21st Ann. Rept., pp. 121-212, pls. iv-xiii, 1897.

Describes the formations of caves in limestones and the character and fauna of the caves in southern Indiana. Includes a bibliography.

73 **Blue** (Archibald). Sixth report of the bureau of mines [Ontario].

Ottawa, 289 pp., 2 geological maps, 1897.

Includes notes on the occurrence of building materials, petroleum, natural gas, mica, graphite, iron, nickel, copper, gold, and corundum and two geological maps.

74 **Bonney** (T. G.). [Review of "The glaciers of North America," by I. C. Russell.]

Nature, vol. lv, p. 556, 1897.

75 **Boss** (C. M.). Some dike features of the Gogebic iron range [Michigan-Wisconsin].

Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 556-563, 1898.

Gives local details regarding the dikes of the region.

76 **Branner** (John Casper). Bacteria and the decomposition of rocks.

Am. Jour. Sci., 4th ser., vol. iii, pp. 438-442, 1897.

Discusses the agency of bacteria in the decomposition of rocks, and reviews some recent literature on the subject.

77 —— The former extension of the Appalachians across Mississippi, Louisiana, and Texas.

Am. Jour. Sci., 4th ser., vol. iv., pp. 357-371, two geological maps, 1897; Abstract, Brit. Assoc. Adv. Sci., Rept. 1897, pp. 643-644, 1898; Review by A. H. Purdue, Jour. of Geol., vol. v, pp. 759-760, 1897.

Discusses the character and extent of the southwestern Appalachian depression and its bearing on the probable extension of the Appalachians across the lower Mississippi region.

78 —— The bauxite deposits of Arkansas.

Jour. of Geol., vol. v, pp. 263-289, pls. i-ii, figs. 1-4, 1897.

Describes the composition and structure of the bauxite material, and discusses the geologic age, origin, and forms of the deposits. Gives a bibliography of the subject.

79 —— [Review of "The Bedford oolitic limestone of Indiana," by T. C. Hopkins and C. E. Siebenthal.]

Jour. of Geol., vol. v, pp. 529-531, 1897.

80 —— The phosphate deposits of Arkansas.

Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. 580-598, 1897.

Describes the character of the Devonian strata in which the deposits occur, and the occurrence and characteristics of the phosphate material, and discusses its origin. Gives chemical analyses.

81 —— The cement materials of southwest Arkansas.

Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 42-63, figs. 1-6, 1898.

Describes the occurrence of the chalk beds, and gives chemical analyses of the material.

82 —— The introduction of new terms in geology.

Science, new ser., vol. v, pp. 912-913, 1897.

83 —— New terms in geology.

Science, new ser., vol. vi, pp. 133-134, 1897.

84 **Branner** (John Casper). See **Ashley** (George H.), No. 24.

85 —— **Newsom** (J. F.) and. The Red River and Clinton monoclines.
See Newsom (J. F.) and Branner (J. C.), No. 439.

86 **Bratnober** (H.). The Klondike gold fields [British Columbia].
Eng. and Mg. Jour., vol. lxiv, p. 484, 1897.
Describes the occurrence of gold placers.

87 **Brewer** (William M.). Further notes on the Alabama and Georgia gold fields.
Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. 464–472, 1897.
Contains notes on the occurrence of gold ores and associated rocks in these States.

88 —— Metal mining in Alabama.
Eng. and Mg. Jour., vol. lxiii, p. 256, 1897.
Describes the occurrence of gold in certain districts of Alabama.

89 —— Gold mining in Georgia.
Eng. and Mg. Jour., vol. lxiii, p. 280, 1897.
Describes the occurrence of gold in northwest Georgia.

90 —— The Villa Rica mining district, Georgia.
Eng. and Mg. Jour., vol. lxiii, p. 483, 1897.
Describes the occurrence of gold in this district.

91 —— Some auriferous quartz bodies in Alabama.
Eng. and Mg. Jour., vol. lxiv, pp. 458–459, 1897.
Describes the occurrence of gold in northern Alabama.

92 —— Copper mining in Alabama.
Ala. Ind. and Sci. Soc., Proc., vol. vii, pp. 13–16, 1897.
Gives brief notes on the occurrence of copper in Cleburne County.

93 —— Gold fields of the South.
Colliery Eng., vol. xvii, pp. 333–335, 1897.
Describes the geologic formations and occurrence of gold in Georgia and Alabama.

94 **Brigham** (Albert Perry). Glacial flood deposits in Chenango Valley [New York].
Geol. Soc. Am., Bull., vol. viii, pp. 17–30, pl. 1, 1897.
Describes the glacial phenomena of the region.

95 **Brooks** (Alfred Hulse), **Wolff** (J. E.) and. The age of the Franklin White limestone of Sussex County, New Jersey.
See Wolff (J. E.) and Brooks (A. H.), No. 733.

96 **Brown** (Lucius P.). Phosphate mining in Tennessee.
Mineral Industry, 1896, pp. 453–456, 1897.
Describes the character and occurrence of phosphate rocks in certain parts of the State.

97 **Brush** (George J.). Manual of determinative mineralogy, with an introduction of blowpipe analysis.
New York, John Wiley & Sons, 1882.
Review by O. C. Farrington, Jour. of Geol., vol. v, pp. 86-87, 1897.

98 **Bryson** (John). The Hempstead Plains, Long Island [New York].
Am. Geol., correspondence, vol. xx, pp. 61-65, 1897.
Describes the glacial phenomena.

99 **Buelna** (Ramon Felix y). Itinerarios geologicos. Estados de Durango, Chihuahua, Sonora y Sinaloa.
Inst. geol. de Mexico, Bulls., Nos. 4-6, pp. 19-29, 1897.
Describes the occurrence of gold and silver ore deposits in these States.

100 —— The Copalquin and Lemon mineral zone, Durango, Mexico.
Eng. and Mg. Jour., vol. lxiv, p. 217, 1897.
Describes the geologic features of the region.

101 **Burwash** (Edward M.). Geology of the Nipissing-Algoma line [Ontario].
Ontario Bureau of Mines, 6th Ann. Rept., pp. 167-184, 1897.
Describes the occurrence of Huronian rocks and the glacial phenomena of the region.

C.

102 **Calvin** (Samuel). Memoir of Charles Wachsmuth.
Geol. Soc. Am., Bull., vol. viii, pp. 374-376, 1897.
Gives a sketch of his life and list of his published papers.

103 —— The State quarry limestone [Iowa].
Iowa Acad. Sci., Proc., vol. iv, pp. 16-21, 1897.
Describes its lithologic and faunal characters and discusses its taxonomic relations.

104 —— Synopsis of the drift deposits of Iowa.
Am. Geol., vol. xix, pp. 270-272, 1897.
Gives brief statements regarding the various stages of the Glacial epoch.

105 —— Geology of Johnson County [Iowa].
Am. Geol., vol. xx, pp. 273, 1897.
Review by W. U[pham].

106 **Campbell** (Marius R.). Erosion at base level.
Geol. Soc. Am., Bull., vol. viii, pp. 221-226, pl. 20, 1897.
Describes local base-levels of the Appalachian region.

107 —— Rapid section work in horizontal rocks.
Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. 298-315, pls. i-iv, 1897.
Describes methods of studying areal geology in regions where the strata lie in a nearly horizontal position.

108 **Case** (E. C.). Foramina perforating the cranial region of a Permian reptile and on a cast of its brain cavity.
Am. Jour. Sci., 4th ser., vol. iii, pp. 321–326, 1897.
Describes the characters of Dimetrodon incisivus Cope and the occurrence of the foramina.

109 —— On the osteology and relationships of Protostega.
Jour. of Morph., vol. xvi, pp. 21–55, pls. iv–vi, 1897.
Describes material from the Niobrara Cretaceous of Kansas.

110 —— [Review of "The Dinosaurs of North America," by O. C. Marsh.]
Jour. of Geol., vol. v, pp. 87–88, 1897.

111 **Catlett** (Charles). Some of the manganese deposits of the Valley of the Virginia.
Eng. and Mg. Jour., vol. lxiv, pp. 156–157, 1897.
Describes the occurrence and character of the ores and gives a chemical analysis.

112 **Chalmers** (Robert). The pre-Glacial decay of rocks in eastern Canada.
Brit. Assoc. Adv. Sci., Rept. 1897, pp. 655–656, 1898.
Describes beds of decayed rock beneath the glacial covering.

113 —— The gold bearing deposits of the eastern townships of Quebec.
Can. Mg. Rev., vol. xvi, pp. 74–77, 1897.
Describes their geological occurrence and discusses their origin.

114 **Chamberlin** (T. C.). [Note on the former extension of the inland ice sheet of Greenland.]
Jour. of Geol., vol. v, pp. 81–85, 1897.
Reviews certain interpretations of the author's views on this subject.

115 —— Glacial studies in Greenland, X.
Jour. of Geol., vol. v, pp. 229–240, figs. 64–68, 1897.
Continues the description of the author's observations of the glacial features of Greenland.

116 —— [Review of "Glaciers of North America, a reading lesson for students in geography and geology," by Israel C. Russell.]
Jour. of Geol., vol. v, pp. 302–303, 1897.

117 —— [Review of "Former extension of Cornell glacier near the southern end of Melville Bay," by Ralph S. Tarr.]
Jour. of Geol., vol. v. pp. 303–307, pl. 1, figs. 1–2, 1897.

118 —— [Review of "Geological Survey of Canada, Annual Report, vol. viii, 1895."]
Jour. of Geol., vol. v, pp. 641–642, 1897.

118*a* —— [Review of "Iowa Geological Survey, vol. vi, Report on lead, zinc, artesian wells, etc."]
Jour. of Geol., vol. v, pp. 642–644, 1897.

118*b* **Chamberlin** (T. C.). [Review of "Geology and Natural Resources of Indiana, 21st Annual Report."]
Jour. of Geol., vol. v, pp. 644–646, 1897.

118*c* —— [Review of "Report on the valley regions, Part II. On the Coosa Valley," by Henry McCalley.]
Jour. of Geol., vol. v, pp. 646–647, 1897.

118*d* —— [Review of "Glacial observations in the Umanak district, Greenland," by G. H. Barton.]
Jour. of Geol., vol. v, pp. 650–651, 1897.

119 —— A group of hypotheses bearing on climatic changes.
Jour. of Geol., vol. v, pp. 653–683, 1897; Brit. Assoc. Adv. Sci., Rept. 1897, pp. 644–647, 1898.

Discusses the indications of glaciations during geologic time and the theories as to the origin and development of the earth and the atmosphere.

120 —— Supplementary hypothesis respecting the origin of the loess of the Mississippi Valley.
Jour. of Geol., vol. v, pp. 795–802, 1897.

Describes the distribution of the loess and discusses its origin.

121 —— Studies for students. The method of multiple working hypotheses.
Jour. of Geol., vol. v, pp. 837–848, 1897.

Discusses the use of multiple hypotheses and their value in geological investigation.

122 —— [Review of "The Glacial Lake Agassiz," by Warren Upham.]
Jour. of Geol., vol. v, pp. 851–853, 1897.

123 —— Former extension of Greenland glaciers.
Science, new ser., vol. v, pp. 400–401, 1897.

Discusses Prof. Tarr's statements on this subject.

124 —— The former extension of ice in Greenland.
Science, new ser., vol. v, p. 516, 1897.

Discusses briefly the indications of glaciation by topography

125 —— Former extension of Cornell glacier near the southern end of Melville Bay.
Science, new ser., vol. v, pp. 748–753, figs. 1–3, 1897.

Reviews some of the questions discussed in previous papers by Prof. Tarr and the author.

126 **Clark** (Maurice). Notes on mining in Oaxaca, Mexico.
Eng. and Mg. Jour., vol. lxiv, pp. 35–36, 1897.

Describes occurrence of silver ores in this region.

127 **Clark** (William Bullock). Eocene deposits of the Middle Atlantic slope in Maryland, Delaware, and Virginia.
Jour. of Geol., vol. v, pp. 310–312, 1897.

Review by C. R. Keyes.

128 **Clark** (William Bullock). (With the collaboration of R. M. Bagg and George B. Shattuck.) Upper Cretaceous formations of New Jersey, Delaware, and Maryland.

Geol. Soc. Am., Bull., vol. viii, pp. 315-358, pls. 40-50, 1897.

Describes the occurrence, characters, and distribution of the Matawan, Monmouth, Rancocas, Manasquan, and Shark River formations. Discusses the interpretation of the sedimentary and faunal records.

128*a* —— Historical sketch embracing an account of the progress of investigation concerning the physical features and natural resources of Maryland.

Md. Geol. Surv., vol. i, pp. 43-138, pls. ii-v, 1897.

129 —— Outline of present knowledge of the physical features of Maryland, embracing an account of the physiography, geology, and mineral resources.

Md. Geol. Surv., vol. i, pp. 141-228, pls. vi-xiii, 1897.

Describes the physiographic features of the State, the character and distribution of the igneous and sedimentary rocks, and the mineral resources.

130 —— and **Bibbins** (Arthur). The stratigraphy of the Potomac group in Maryland.

Jour. of Geol., vol. v, pp. 479-506, 1897.

Describes the lithologic and faunal characters of the Patuxent, Arundle, Patapsco, and Raritan formations. Discusses the relations and age of the deposits and the views of other writers.

131 —— and **Shattuck** (George B.). The geology of the sand hills of New Jersey.

Johns Hopkins Univ. Circ.. vol. xvi, pp. 13-16, 1897.

Reviews the literature on this region and describes the stratigraphic relations and correlations of the deposits. Discusses the evidence of their age.

132 **Clarke** (F. W.) and **Hillebrand** (W. F.). Analyses of rocks with a chapter on analytical methods.

U. S. Geol. Surv., No. 148, 306 pp., 1897.

Includes analyses of a large number of igneous and sedimentary rocks from various parts of the United States.

133 **Clarke** (John M.). The Lower Silurian trilobites of Minnesota.

Minn. Geol. and Nat. Hist. Surv., Paleontology, vol. iii, Pt. II, pp. 695-759, figs. 1-82, 1897.

Gives the terminology of the trilobites and notes on various species; also descriptions of new species.

134 —— The Lower Silurian Cephalopoda of Minnesota.

Minn. Geol. and Nat. Hist. Surv., Paleontology, vol. iii, Pt. II, pp. 761-812, pls. xlvii-lix, figs. 1-9, 1897.

135 —— [Review of "Paleozoic fossils, vol. iii, pt. iii. The fossils of the Galena-Trenton and Black River formations of Lake Winnipeg and its vicinity," by J. F. Whiteaves.]

Am. Geol., vol. xx, pp. 187-188, 1897.

136 **Clarke** (John M.). The morphology of graptolites.
Am. Geol., vol. xx, pp. 188-189, 1897.
Reviews some recent literature on graptolites.

137 —— A sphinctozoan calcisponge from the Upper Carboniferous of eastern Nebraska.
Am. Geol., vol. xx, pp. 387-392, pl. xxiii, 1897.
Describes the characters of the material.

138 **Claypole** (E. W.). A new Dinichthys-Dinichthys kepleri.
Am. Geol., vol. xix, pp. 322-324, pl. xx, 1897.
Describes and figures a new species from the Cleveland shale of Ohio.

139 —— [Review of "Pleistocene features and deposits of the Chicago area," by Frank Leverett.]
Am. Geol., vol. xx, p. 57, 1897.

140 —— [Review of "Geological Survey of Canada, Annual Report for 1895."]
Am. Geol., vol. xx, pp. 130-131, 1897.

141 —— [Review of "On the southern Devonian formation," by H. S. Williams.]
Am. Geol., vol. xx, pp. 133-134, 1897.

142 —— [Review of "Geological Survey of Mexico, Bulletins 4, 5, 6."]
Am. Geol., vol. xx, pp. 184-186, 1897.

143 **Coleman** (Arthur P.). Glacial and Interglacial deposits at Toronto [Canada].
Brit. Assoc. Adv. Sci., Rept. 1897, pp. 650-651, 1898.
Describes glacial phenomena of the vicinity.

144 —— Third report on the West Ontario gold regions.
Ontario Bureau of Mines, 6th rept., pp. 71-124, 1897.
Describes the occurrence of gold in the region.

145 —— Anthraxolite or anthracite carbon.
Ontario Bureau of Mines, 6th rept., pp. 159-161, 1897.
Describes its occurrence in Ontario.

146 —— "Notes on the western Ontario gold fields."
Can. Mg. Review, vol. xvi, pp. 115-116, 1897.

147 —— The anorthosites of the Rainy Lake region [Ontario].
Can. Rec. Sci., vol. vii, pp. 230-235, 1897.
See Bibliography and Index for 1896, No. 133.

148 **Cooper** (J. G.). On some new Cretaceous (and Eocene?) Mollusca of California.
Cal. Acad. Sci., Proc., vol. vi, pp. 330-336, pls. 47-48, 1897.
Describes and figures five new species.

149 **Cope** (E. D.). On new Paleozoic vertebrata from Illinois, Ohio, and Pennsylvania.

Am. Phil. Soc., Proc., vol. xxxv, pp. 71–91, 3 pls., 1897.

Describes new species of fishes and batrachia from the Catskill and Coal Measure series of these States.

150 **Cragin** (F. W.). Discovery of marine Jurassic rocks in southwestern Texas.

Jour. of Geol., vol. v, pp. 813–820, 1897.

Discusses the fossil evidence of the occurrence of strata in southwestern Texas and names the beds the Malone formation.

151 —— Observations on the Cimarron series.

Am. Geol., vol. xix, correspondence, pp. 351–363, 1897.

Describes the author's observations of this series in Kansas, Oklahoma, and Texas, and discusses the classification and nomenclature of the beds.

152 —— Notes on some fossils of the Comanche series.

Science, new ser., vol. vi, pp. 134–136, 1897.

Includes notes on certain species and description of Turritella belviderei n. sp.

153 —— Stratigraphic names for Caprina and Caprotina (or Requienia) beds.

Science, new ser., vol. vi, p. 136, 1897.

Suggests that the name Barton Creek be abandoned, and proposes the name Stonewall limestone for it. Proposes the local names Granbury bed for the Caprotina limestone.

154 **Crook** (A. R.). Some geological causes of the scenery of the Yellowstone National Park.

Am. Geol., vol. xx, pp. 159–167, 1897.

Describes the general physiographic features and geological history of the Park.

155 **Crosby** (W. O.). Contribution to the geology of Newport Neck and Conanicut Island [Rhode Island].

Am. Jour. Sci., 4th ser., vol. iii, pp, 230–236, figs. 1–2, 1897.

Reviews previous descriptions of the geology of the region and describes the characters and relations of the Carboniferous and igneous rocks.

156 —— The great fault and accompanying sandstone dikes of Ute Pass, Colorado.

Science, new ser., vol. v, pp. 604–607, 1897.

Describes the occurrence of the fault and discusses the origin of the dikes.

157 —— and **Fuller** (M. L.). Origin of pegmatite.

Am. Geol., vol. xix, pp. 147–180, pls. viii–ix, 1897.

Describes the character of acid pegmatites and discusses the theories of their igneous and aqueo-igneous origin.

158 **Cross** (Whitman). Igneous rocks of the Leucite Hills and Pilot Butte, Wyoming.

Abstract, Science, new ser., vol. v, p. 361, 1897.

Describes the occurrence and petrographic and chemical characters of wyomingite, orendite, and madupite. Discusses the classification and nomenclature, and describes the inclusions in the Leucite Hills rocks.

159 —— An analcite basalt from Colorado.

Jour. of Geol., vol. v, pp. 684–693, 1897.

Describes the petrographic and chemical characters of the material, and discusses its relations with closely allied rocks.

160 —— and **Penrose** (R. A. F., jr.). Geology and mining industry of the Cripple Creek district, Colorado.

Jour. of Geol.. vol. v, pp. 197–203, 1897.

Review by Arthur Winslow.

161 **Cushing** (H. P.). Notes on hypersthene-andesite from Mt. Edgecumbe, Alaska.

Am. Geol., vol. xx, pp. 156–159, 1897.

Includes a letter from H. F. Reid describing its occurrence, and a discussion of the petrographic characters of the material.

162 **Dall** (William H.). A table of North American Tertiary horizons correlated with one another and with those of western Europe, with annotations.

U. S. Geol. Surv., 18th Ann. Rept., Pt. II, pp. 327–348, 1898.

Defines the main divisions of the Tertiary and includes notes on the table.

163 —— **Guppy** (R. J. L.) and. Descriptions of Tertiary fossils from the Antillean region.

See Guppy (R. J. L.) and Dall (W. H.), No. 255.

164 **Daly** (Reginald Aldworth). Studies of the so-called porphyritic gneiss of New Hampshire.

Jour. of Geol., vol. v., pp. 694–722, figs. 1-2, pp. 776-794, 1897.

Reviews previous descriptions of the gneiss, describes its field relations and structure, and discusses the age of the intrusions.

165 **Darton** (Nelson Horatio). New developments in boring and irrigation in eastern South Dakota.

U. S. Geol. Surv., 18th Ann. Rept., Pt. IV, pp. 567–615, pls. xxxviii–xlvii, figs. 78–85, 1897.

Describes the progress of well sinking, the extent of the artesian basin, and the irrigation by artesian waters in 1896.

166 —— Preliminary report on artesian waters of a portion of the Dakotas.

Am. Geol, vol xix, pp. 274–276, 1897.

Review by J. E. T[odd].

167 **Davidson** (George). The submerged valleys of the coast of California, U. S. A., and of Lower California, Mexico.

Cal. Acad. Sci., Proc. Geol., 3d ser., vol. 1, No. 2, pp. 73–103, pls. iv–xii, 1897. Review by W. S. T. Smith, Jour. of Geol., vol. v, pp. 533–534, 1897.

Describes the submerged valleys of the coast of California, and presents a number of contour maps of the coast line.

168 **Davis** (William M.). The Triassic formation of Connecticut.

U. S. Geol. Surv., 18th Ann. Rept., Pt. II, pp. 9–192, pls. i–xx, figs. 1–52, 1898.

Describes the deposition, character, and occurrence of the Triassic strata, the occurrence and characters of the igneous rocks, and the deformation and denudation of the region.

169 —— Is the Denver formation lacustrine or fluviatile?

Science, new ser., vol. vi, pp. 619–621, 1897.

Discusses the origin of the Denver formation.

170 **Dawson** (George M.). Are the bowlder clays of the Great Plains marine?

Jour. of Geol., vol. v, pp. 257–262, 1897.

Describes the occurrence of Cretaceous marine organisms in the bowlder clays of the Great Plains in British Columbia. Gives a list of the fossils determined by Mr. Joseph Wright.

171 —— [Review of "Genesis of Lake Agassiz," by J. B. Tyrrell.]

Jour. of Geol., vol. v, pp. 78–81, 1897.

172 —— Opening address. Section C, British Association for the Advancement of Science, 1897.

Brit. Assoc. Adv. Sci., Rept. 1897, pp. 628–640, 1897; Nature, vol. lvi, pp. 396–401, 1897; Sci. Am. Suppl., vol. xliv, pp. 18089–18090, 1897.

Discusses the relations of the pre-Cambrian rocks of Canada and other parts of North America.

173 —— The physical geography and geology of Canada.

Toronto, 48 pp., 1897.

Gives a general outline of the physiography and geologic features of Canada.

174 **Dawson** (J. William). Note on Carboniferous Entomostraca from Nova Scotia, in the Peter Redpath museum, determined and described by Prof. T. Rupert Jones, F. R. S., and Mr. Kirkby.

Can. Rec. Sci., vol. vii, pp. 316–323, figs. 1–9, 1897.

Describes and figures a number of species.

175 —— Additional notes on fossil sponges and other organic remains from the Quebec group of Little Metis, on the lower St. Lawrence. With notes on some of the specimens by G. J. Hinde.

Can. Roy. Soc., Proc. and Trans., 2d ser., vol. ii, sect. iv, pp. 91–121, pls. i–iv, 1896.

Discusses the nomenclature of the subdivisions of the Quebec group, and describes the geologic features at Little Metis. Gives general remarks on the fossil sponges and descriptions of the species, including several new ones.

176 **Dawson** (J. William). Note on cryptzoon and other ancient fossils.
Can. Rec. Sci., vol. vii, pp. 203-219, figs. 1-3, 1897.
Gives a review of the knowledge of certain ancient fossils, mainly pre-Cambrian, and describes one new species from the grand canyon of the Colorado.

177 **Day** (David T.). A suggestion as to the origin of Pennsylvania petroleum.
Am. Phil. Soc., Proc., vol. xxxvi, pp. 112-115, 1897.
Discusses a theory suggested by John N. MacGonigle.

178 **Diller** (Joseph Silas). Crater Lake, Oregon.
Am. Jour. Sci., 4th ser., vol. iii, pp. 165-172, pl. v, 1897.
Nat. Geog. Mag., vol. 8, pp. 33-48, pl. i, 7 figs., 1897.
Describes the peculiar features of the lake and discusses its origin.

179 —— Hornblende-basalt in northern California.
Am. Geol., vol. xix, pp. 253-255, 1897.
Describes the petrographic characters of the material and gives its chemical analysis.

180 —— The origin of Camas Swale.
Abstract, Science, new ser., vol. vi, p. 923, 1897.

181 **Dixon** (Roland B.) and **Drew** (Charles D.). Observations on the physiography of western Massachusetts.
Science, new ser., vol. vi, p. 847, 1897.
Describes the slope of the peneplain in this region.

182 **Drake** (Noah Fields). The topography of California.
Jour. of Geol., vol. v, pp. 563-578, 1897.
Describes the topographic features of the state.

183 **Draper** (Marshall). Hahn's Peak [Colorado].
Colliery Engineer, vol. xvii, pp. 437-438, 1897.
Describes the geologic features of the region and the occurrence of the gold and silver ores.

184 **Dresser** (John A.). Geological report and map of the district about Montreal [Canada].
Can. Rec. Sci., vol. vii, pp. 247-255, 1897.
Gives a summary of a report of the Geological Survey of Canada on this region.

185 **Drew** (Charles D.), **Dixon** (Roland B.) and. Observations on the physiography of western Massachusetts.
See Dixon (R. B.) and Drew (C. D.), No. 181.

186 **Duden** (Hans). Some notes on the black slate or Genesee shale of New Albany, Ind.
Ind. Dept. of Geol. and Nat. Res., 21st Ann. Rept., pp. 108-119, pls. ii-iii, 1897.
Describes the chemical composition of the slate and the methods of utilizing it. Includes a description of new genera and species of fossil plants.

187 **Dumble** (E. T.). Some Texas oil horizons.

Abstract, Science, new ser., vol. vi, p. 72 (⅛ p.), 1897.

Gives a brief statement as to the different geologic horizons at which oil occurs in this state.

E.

188 **Eastman** (C. R.). On Ctenacanthus spines from the Keokuk limestone of Iowa.

Am. Jour. Sci., 4th ser., vol. iv, pp. 10–12, figs. 1–2, 1897.

Describes two species, including one new one.

189 —— Tamiobatis vetustus, a new form of fossil skate.

Am. Jour. Sci., 4th ser., vol. iv, pp. 85–90, pl. 1, fig. 1, 1897.

Describes material from the Devonian of Kentucky.

190 —— On the characters of Macropetalichthys.

Am. Nat., vol. xxxi, pp. 493–499, pl. xii, 1897.

191 **Ellis** (W. Hodgson). Chemical composition of the anthraxolite.

Ontario Bureau of Mines, 6th Rept., pp. 162–166, 1897.

Gives analyses of various specimens.

192 **Ells** (R. W.). Problems in Quebec geology.

Brit. Assoc. Adv. Sci., Rept. 1897, pp. 640–642, 1898. Abstract, Ottawa Nat., vol. xi, pp. 173–176, 1897.

Describes the general results of the study of the geology of this province.

193 —— Paleozoic outliers in the Ottawa River basin [Canada].

Can. Roy. Soc., Proc. and Trans., 2d ser., vol. ii, sec. iv, pp. 137–149, 1896.

Describes the occurrence of Cambro-Silurian and Upper Silurian formations in this region.

194 —— Memoir of N. J. Giroux.

Geol. Soc. Am., Bull., vol. viii, p. 377, 1897.

Gives a sketch of his life.

195 —— [Note on "Origin and relations of the Grenville-Hastings series of the Canadian Laurentian."]

Geol. Soc. Am., Bull., vol. viii, pp. 401–402, 1897.

Describes briefly the characters of the series.

196 —— See **Adams** (F. D.) and **Barlow** (A. E.), No. 5.

197 —— **Adams** (F. D.), **Barlow** (A. E.) and. On the origin and relations of the Grenville and Hastings series in the Canadian Laurentian.

See Adams (F. D.), Barlow (A. E.), and Ells (R. W.), No. 7.

198 **Emerson** (B. K.). Diabase pitchstone and mud inclosures of the Triassic trap of New England.

Geol. Soc. Am., Bull., vol. viii, pp. 59–86, pls. 3–9, 1897.

Describes the characters of the tuff, mud inclosures, pitchstone, and the petrographic character of the Greenfield bed and the Meriden ash bed. Discusses the origin of the glass and minerals.

199 **Emmons** (Samuel Franklin). Some mines of Rosita and Silver Cliff, Colorado.

Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. 773–823, 1897.

Describes the geologic history of the region, and the occurrence and character of the ore bodies in the principal mines. Discusses their origin. Gives chemical analyses of waters from deep levels in the Geyser mine and a discussion of the results.

200 —— Origin of Green River.

Science, new ser., vol. vi, pp. 19–21, 1897.

Discusses the evidence as to the origin and development of this river.

201 —— The geology of government explorations.

Geol. Soc. of Wash., Presidential address, 39 pp., Washington, 1897; Science, new ser., vol. v, pp. 1–15, 42–51, 1897.

Gives a historical sketch of the work of geological surveys undertaken by the United States government, and a bibliography of the subject.

202 —— and **Tower** (George Warren, jr.). Economic geology of the Butte Special district [Montana].

U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 38, 1897.

Describes the fissure systems, the distribution of the ores, the ore deposition, the minerals occurring with the ores, and the character and occurrence of the lodes.

203 **Endlich** (F. M.). The Pearce mining district, Arizona.

Eng. and Mg. Jour., vol. lxiii, p. 571, 1897.

204 **Engel** (George W.). Description of a peculiar fault in the Mammoth coal bed, Panther Creek basin, Pennsylvania.

Colliery Engineer, vol. xviii, p. 100, 2 figs., 1897.

F.

205 **Fairbanks** (Harold W.). The geology of the San Francisco peninsula [California].

Jour. of Geol., vol. v, pp. 63–76, 1897.

Reviews the report of Prof. Lawson on this subject and discusses the author's conclusions.

206 —— An interesting case of contact metamorphism.

Am. Jour. Sci., 4th ser., vol. iv, pp. 36–38, 1 fig., 1897.

Describes the geologic features of the locality in southern California and the contact phenomena.

207 —— The tin deposits at Temescal, southern California.

Am. Jour. Sci., 4th ser., vol. iv, pp. 39–42, 1897. Mg. and Sci. Press, vol. lxxv, p. 362, 1897.

Describes the geologic features of the region and the occurrence of the vein system and the tin deposits.

208 **Fairbanks** (Harold W.). Oscillations of the coast of California during the Pliocene and Pleistocene.

Am. Geol., vol. xx, pp. 213–245, pl. xv, 1897.

Reviews previous opinions concerning the subject, and discusses the evidences of the separation of the Pliocene and Pleistocene, and the evidence of a post-Pliocene disturbance and uplift.

209 —— Outline of the geology of California with reference to its mineral deposits.

Mg. and Sci. Press, vol. lxxiv, pp. 132, 152, 173, 193, 213, and 232, 1897.

Describes the general geologic features of the occurrence of mineral deposits in California.

F.

210 **Fairchild** (Herman LeRoy). Glacial geology of western New York.

Geol. Mag., dec. 4, vol. iv, pp. 529–537, with map, 1897; Brit. Assoc. Adv. Sci., Rept. 1897, p. 664, (¼ p.), 1898.

Describes the glacial deposits and phenomena of this portion of the state.

211 —— Lake Warren shore lines in western New York and the Geneva beach.

Geol. Soc. Am., Bull., vol. viii, pp. 269–284. pl. 30, 1897.

Describes the occurrence of the shore lines and other glacial phenomena of the region.

212 **Farrington** (Oliver C.). Observations on Popocatepetl and Ixtaccihuatl, with a review of the geographic and geologic features of the mountains [Mexico].

Field Col. Mus., Geol. ser., vol. 1, pp. 75–120, pls. vii–xviii, figs. 1–2, 1897.

Reviews the literature on the region, and describes the geographic, geologic, and glacial features.

213 —— [Review of "Manual of determinative mineralogy, with an introduction on blowpipe analysis," by George J. Brush.]

Jour. of Geol., vol. v, pp. 86–87, 1897.

214 —— The average specific gravity of meteorites.

Jour. of Geol., vol. v., pp. 126–130, 1897.

Reviews previous discussions of the subject, and gives the results of the author's studies.

215 —— The eruptive rocks of Mexico.

Jour. of Geol., vol. v, pp. 467–468, 1897.

Gives a summary of recent work by Señor Ordonez on this subject.

216 **Fenderson** (W. C.). Turquoise mining in New Mexico.

Mg. and Sci. Press, vol. lxxiv, p. 192, 1897.

Describes the occurence of turquoise in New Mexico.

217 **Ferrier** (W. F.), **Barlow** (A. E.) and. On the relations and structure of certain granites and associated arkoses of Lake Temiscaming, Canada.

See Barlow (A. E.) and Ferrier (W. F.), No. 40.

218 **Finch** (Grant E.). Drift section at Oelwein, Iowa.

Iowa Acad. Sci., Proc., vol. iv, pp. 54–58, pl. 1, 1897.

Describes the local features of the drift beds.

219 **Foerste** (August F.). A report on the geology of the Middle and Upper Silurian rocks of Clark, Jefferson, Ripley, Jennings, and southern Decatur counties, Indiana.

Ind. Dept. Geol. and Nat. Res., 21st Ann. Rept., pp. 213–288, pls. xiv–xvii, 1897.

Describes the lithologic and faunal characters and occurrence of the different subdivisions of the Silurian strata, and includes geological maps of the counties named.

220 **Foote** (H. W.), **Pratt** (J. H.) and. On wellsite, a new mineral.

See Pratt (J. H.) and Foote (H. W.), No. 485.

221 —— **Penfield** (S. L.) and. On bixbyite, a new mineral, and notes on the associated topaz.

See Penfield (S. L.) and Foote (H. W.), No. 469.

222 —— —— Note concerning the composition of ilmenite.

See Penfield (S. L.) and Foote (H. W.), No. 470.

223 **Foote** (Warren M.). Note on a new meteorite from the Sacramento Mountains, New Mexico.

Am. Jour. Sci., 4th ser., vol. iii, pp. 65–66, pls. i–ii, 1897. Nature, vol. lv, pp. 572–573, figs. 1–2, 1897.

Describes the mass and gives its chemical analysis.

224 **Fowke** (Gerard). The formation of natural bridges.

Stone, vol. xiv, pp. 355–357, 1897.

Discusses the mode of formation of natural bridges.

225 **Frazer** (Persifor). Tables for the determination of minerals by physical properties ascertainable with the aid of a few field instruments.

J. B. Lippincott & Co., Philadelphia, 4th edition, 1897.

Review by U. S. G[rant], Am. Geol., vol. xix, pp. 221–222, 1897; Review by E. B. Mathews, Science, new ser., vol. v, pp. 624–625, 1897.

226 —— Notes on the northern Black Hills of South Dakota.

Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 204–231, 1898.

Describes the general geology of the region and occurrence of the gold ores. Includes a bibliography.

227 **Fuller** (M. L.), **Crosby** (W. O.) and. Origin of pegmatite.

See Crosby (W. O.) and Fuller (M. L.), No 157.

G.

228 **Gemmell** (R. C.). The Camp Floyd mining district and the Mercur mine, Utah.

Eng. and Mg. Jour., vol. lxiii, pp. 403–404, 1897.

Describes the topographic and geologic features of the district.

229 **Gilbert** (Grove Karl). Recent earth movements in the Great Lakes region.

U. S. Geol. Surv., 18th Ann. Rept., pt. ii, pp. 601–647, pl. cv, figs. 93–101, 1898; Nat. Geog. Mag., vol. viii, pp. 233–247, figs. 1–7, 1897; Abstract, Nature, vol. lvii, pp. 211–213, fig. 1, 1897.

Describes the general features of the region and the methods of obtaining the data, and gives a discussion and summary of results.

230 —— Pueblo folio, Colorado.

U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 36, 1897.

Describes the geologic history of the region, the character and occurrence of the Archean, Silurian, Carboniferous, Jura-Trias, Cretaceous, Neocene, and Pleistocene strata, the character and origin of the topographic features and the economic resources of the region. Includes topographic and geological maps.

231 —— Old tracks of Erian drainage in western New York.

Abstract, Geol. Soc. Am., Bull., vol. viii, pp. 285–286, 1897.

Describes the general features of the Glacial drainage of the region.

232 **Gill** (Theodore). Edward Drinker Cope, Naturalist. A chapter in the history of Science.

Am. Nat., vol. xxxi, pp. 831–863, 1897; Science, new ser., vol. vi, pp. 225–243, 1897; Sci. Am. Suppl., vol. xliv, pp. 18028, 18080–18081, and 18092–18094, 1897.

Gives a sketch of the life of Prof. Cope and a review of his work as a naturalist.

233 **Gilpin** (E., jr.). The geological horizons of some Nova Scotia minerals.

Brit. Assoc. Adv. Sci., Rept. 1897, p. 663 (⅓ p.). 1898.

Mentions the geologic horizons at which certain minerals occur.

234 —— Some analyses of Nova Scotia coals and other minerals.

N. S. Inst. Sci., Proc. and Trans., 2d ser., vol. ii, pp. 246–254, 1897.

Gives analyses of coals and iron ore.

235 **Goodrich** (Harold Beach). Recent warpings as shown by drainage peculiarities [Alaska].

U. S. Geol. Surv., 18th Ann. Rept., pt. iii, pp. 276–289, 1898.

Describes Alaskan drainage and the warping of the region as measured by the streams, and gives a summary of conclusions.

236 —— See **Spurr** (J. E.), No. 575.

237 **Gordon** (C. H.). [Review of "Correlation of Erie-Huron beaches with outlets and moraines in southeastern Michigan," by F. B. Taylor.]

Jour. of Geol., vol. v, pp. 313-317, 1897.

238 **Grabau** (Amadeus W.). The sand plains of Truro, Wellfleet, and Eastham [Massachusetts].

Abstract, Science, new ser., vol. v, pp. 334-335, 361, 1897.

Describes the physiography of the region and the character and occurrence of the sand plains.

239 **Grant** (U. S.). [Review of "Preliminary report on the Marquette iron bearing district of Michigan," by C. R. Van Hise and W. S. Bayley. With a chapter on the Republic trough, by H. L. Smyth.]

Jour. of Geol., vol. v, pp. 401-404, 1897.

240 —— [Review of "Tables for the determination of minerals by physical properties ascertainable with the aid of a few field instruments," by Persifor Frazer.]

Am. Geol., vol. xix, pp. 221-222, 1897.

241 —— [Review of "Biennial report of the State geologist of Missouri," by C. R. Keyes.]

Am. Geol., vol. xix, p. 350 (½ p.), 1897.

242 —— Lakes with two outlets in northeastern Minnesota.

Am. Geol., vol. xix, pp. 407-411, 1897.

Describes the occurrence of several lakes of this character, and discusses the evidences of their probable duration.

243 —— [Review of "Treatise on rocks, rock-weathering and soils," by George P. Merrill.]

Am. Geol., vol. xx, pp. 273-274, 1897.

244 —— [Review of "Syllabus of general geology for students, with definition and references," by C. W. Hall.]

Am. Geol., vol. xx, pp. 323-324, 1897.

245 —— [Review of "Geology of Polk County, Iowa," by H. F. Bain.]

Am. Geol., vol. xx, p. 334 (⅔ p.), 1897.

246 **Gratacap** (L. P.). Fossils and fossilization.

Am. Nat., vol. xxxi, pp. 16-33, 191-199, 285, 293, 1897.

Continues the discussion from paper in Am. Nat., vol. xxx, p. 1003, 1896.

247 **Gregory** (J. W.). Some problems of Arctic geology. I. The polar basin.

Nature, vol. lvi, pp. 301-303, figs. 1-3, 1897.

Discusses the geologic history of the Arctic region.

248 —— Some problems of Arctic geology. II. Former Arctic climates.

Nature, vol. lvi, pp. 351-352, 1897.

Discusses the evidences as to the nature of Arctic climates in former geologic ages.

249 **Gresley** (W. S.). Traces of organic remains from Huronian (?) series at Iron Mountain, Mich., etc.

Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. 527-534, 1897.

Describes the characteristics of markings considered to be of organic origin from the ore bodies at this locality.

250 **Grimsley** (G. P.). Gypsum deposits of Kansas.

Geo. Soc. Am., Bull., vol. viii, pp. 227-240, pls. 21-22, 1897.

Describes the topography of the areas, the origin, character, and age of the gypsum deposits, and the occurrence and character of the secondary gypsum deposits.

251 —— Gypsum in Kansas.

Kan. Univ. Quart., vol. vi, pp. 15-27, pls. iii-vi, figs. 1-6, 1897.

Describes the character and extent of the gypsum deposits of the State.

252 —— The study of natural palimpsests.

Am. Geol., vol. xix, pp. 15-21, 1897.

Discusses the phenomena of metamorphism.

253 —— [Review of "The University Geological Survey of Kansas," vol. ii.]

Am. Geol., vol. xix, pp. 272-274, 1897.

254 **Griswold** (Leon S.). Notes on the geology of Southern Florida.

Jour. of Geol., vol. v, pp. 312-313, 1897.

Review by J. Edmund Woodman.

255 **Guppy** (R. J. Lechmere) and **Dall** (William H.). Descriptions of Tertiary fossils from the Antillean region.

U. S. Nat. Mus., Proc., vol. xix, pp. 303-331, pls. xxvii-xxx, 1897.

256 **Gurley** (William F. E.), **Miller** (S. A.) and. New species of crinoids, cephalopods, and other Paleozoic fossils.

See Miller (S. A.) and Gurley (Wm. F. E.), No. 431.

257 **Gwillim** (J. C.) and **Johnson** (W. S.). Some ores and rocks of southern Slocan division, West Kootenay, British Columbia.

Can. Rec. Sci., vol. vii, pp. 293-302, 6 figs., 1897.

Describes the geologic features and the occurrence of the gold and silver ores of the region.

H.

258 **Hall** (Christopher W.). Syllabus of general geology for students, with definitions and references.

The University Book Store, Minneapolis, Minn., 8vo, 127 pp., 1897.

Review by U. S. G[rant], Am. Geol., vol. xx, pp. 323-324, 1897.

259 **Hallock** (W.). Subterranean temperatures at Wheeling, W. Va., and Pittsburg, Pa.

School of Mines Quart., vol. xviii, pp. 148-153, 1897.

Gives notes on the temperatures in deep wells at these localities.

260 **Hanna** (George B.), **Nitze** (H. B. C.) and. Gold deposits of North Carolina.

See Nitze (H. B. C.) and Hanna (G. B.), No. 445.

261 **Hardman** (John E.). Notes on some mining districts in British Columbia.

Can. Mg. Review, vol. xvi, pp. 109–112, 1897.

Describes briefly the occurrence of gold and silver in the Rossland, Nelson, and Fort Steele districts.

262 **Hatcher** (J. B.). Diceratherium proavitum.

Am. Geol., vol. xx, pp. 313–316, pl. xix, 1897.

Makes correction of error in original description, and discusses its assignment to the genus Diceratherium rather than Aceratherium.

263 **Haworth** (Erasmus). Underground waters of southwestern Kansas.

U. S. Geol. Surv., Water-Supply and Irrigation Papers No. 6, 63 pp., pls. i–xii, figs. 1–2, 1897.

Describes the physiography of the region, the character and occurrence of the Juratrias, Cretaceous, and Tertiary beds, and the water supply. Includes a geological map.

264 —— Physiography of western Kansas.

Kan. Univ. Geol. Surv., vol. ii, pp. 11–49, pls. i–viii, fig. 1, 1897.

Describes the stream erosion of the region.

265 —— Physical properties of the Tertiary [Kansas].

Kan. Univ. Geol. Surv., vol. ii, pp. 251–284, pls. xxxvi–xliv, 1897.

Describes the physical character of the material forming the Tertiary deposits, and discusses their origin and mode of formation.

266 —— The University Geological Survey of Kansas, vol. ii.

Review by S. W. W[illiston], Jour. of Geol., vol. v, pp. 400–401, 1897; Review by G. P. G[rimsley], Am. Geol., vol. xix, pp. 272–274, 1897.

267 —— See **Logan** (W. N.), No. 388.

268 —— and **Beede** (J. W.). The McPherson Equus beds [Kansas].

Kan. Univ. Geol. Surv., vol. ii, pp. 287–296, pl. xlvii, 1897.

Describes the topographic features of the region, and the character, structure, and origin of the beds.

269 **Hayes** (C. W.). Solution of silica under atmospheric conditions.

Geol. Soc. Am. Bull., vol. viii, pp. 213–220, pls. 17–19, 1897.

Describes occurrence of this phenomenon and the chemical reactions involved.

270 —— [Review of "Report on the Valley Regions of Alabama, Part II. On the Coosa Valley region." By Henry McCalley.]

Science, new ser., vol. vi, p. 296, 1897.

271 —— The geological relations of some Southern iron ores.

Science, new ser., vol. v, p. 558, 1897.

272 **Head** (Jeremiah). The coal industry of the southeastern States of North America.

North of Eng. Inst. Mg. and Mech. Engrs., Trans., vol. xlvi, pp. 167-182, 3 figs., 1897.

Describes the character and occurrence of coal in the southern Appalachian region.

273 **Henrich** (Carl). Faulting and accompanying features observed in glacial gravel and sand in southern Michigan.

Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. 460-464, fig. 1, 1897.

Describes the character of the strata and the faulting that has taken place.

274 **Herrick** (C. L.). The geology of a typical mining camp in New Mexico.

Am. Geol., vol. xix, pp. 256-262, pls. xiii-xiv, 1897.

Describes the general geologic features of the Magdalena Mountains and the fault phenomena of the region.

275 **Hershey** (Oscar F.). The Florencia formation.

Am. Jour. Sci., 4th ser., vol. iv, pp. 90-98, 1897.

Describes the lithologic character, distribution, and relations of the formation in Illinois, and gives a list of fossils determined by W. H. Dall.

276 —— Mode of formation of till as illustrated by the Kansan drift of northern Illinois.

Jour. of Geol., vol. v, pp. 50-62, fig. 1, 1897.

Describes the general glacial features of the region and the occurrence and mode of formation of the till.

277 —— Eskers indicating stages of glacial recession in the Kansan epoch in northern Illinois.

Am. Geol., vol. xix, pp. 197-209, 237-253, pl. xi, 1897.

Describes the distribution of the stratified gravel and sand, its mode of deposition, and the occurrence of transported rock masses. Presents a map showing the Kansan stages of recession and gives the author's conclusions.

278 —— The term Pecatonica limestone.

Am. Geol., vol. xx, correspondence, pp. 66-67, 1897.

Discusses the use of the term Pecatonica.

279 —— The physiographic development of the upper Mississippi valley.

Am. Geol., vol. xx, pp. 246-268, 1897.

Describes the peneplains in southeastern Minnesota, northeastern Iowa, northwestern Illinois, and the canyon valleys of the upper Mississippi region.

280 —— The inferior boundary of the Quaternary era.

Am. Nat., vol. xxxi, pp. 104-114, 1897.

Discusses the evidences of the beginning of the Quaternary epoch.

281 **Hershey** (Oscar F.). [Review of "The formation of the Quaternary deposits of Missouri," by James E. Todd.]
Science, new ser., vol. v, pp. 587–588, 1897.

282 —— The loess formation of the Mississippi valley.
Science, new ser., vol. v, pp. 768–770, 1897.
Describes the character and origin of the loess.

283 **Hill** (Robert T.). Memoir of Robert Hay.
Geol. Soc. Am., Bull., vol. viii, pp. 370–374, 1897.
Gives a sketch of his life and a list of his published papers.

284 —— The alleged Jurassic of Texas. A reply to Prof. Jules Marcou.
Am. Jour. Sci., 4th ser., vol. iv, pp. 449–469, 1897.
Reviews the work on the Cretaceous series of the southwest, with special reference to the work and publications of Prof. Marcou in the same region.

285 —— The easternmost volcanoes of the United States.
Science, new ser., vol. vi, pp. 594–595, 1897.
Describes occurrence of volcanic flows in eastern New Mexico.

286 —— The stratigraphic succession in Jamaica.
Brit. Assoc. Adv. Sci., Rept. 1897, p. 642 (½ p.), 1898.

287 —— and **Vaughan** (T. Wayland). Geology of the Edwards plateau and Rio Grande plain adjacent to Austin and San Antonio, Texas, with reference to the occurrence of underground waters.
U. S. Geol. Surv., 18th Ann. Rept., Pt. II, pp. 199–321, pls. xxi–lxiv, figs. 53–76, 1898.
Describes the physiography of the region, the character and occurrence of the Comanche and Gulf series, and the Eocene strata, and the occurrence of underground water.

288 **Hille** (F.). The western Ontario gold fields and their genesis.
Can. Mg. Review, vol. xvi, pp. 153–158, figs. 1–11, 1897.
Describes the origin of the ore bodies.

289 **Hillebrand** (W. F.), **Clarke** (F. W.) and. Analyses of rocks, with a chapter on analytical methods.
See Clarke (F. W.) and Hillebrand (W. F.), No. 132.

290 **Hinde** (G. J.). Eminent living geologists. Dr. G. M. Dawson.
Geol. Mag., dec. 4, vol. iv, pp. 193–195, 1897.
Gives a sketch of the life and work of Dr. Dawson.

291 —— See Dawson (J. William), No. 175.

292 **Hitchcock** (C. H.). Note on the stratigraphy of certain homogeneous rocks.
Abstract, Geol. Soc. Am., Bull., vol. viii, pp. 389–390, 1897.
Describes the cleavage and stratification planes of certain rocks of Vermont and New Hampshire.

293 **Hitchcock** (C. H.). Sketch of W. W. Mather.
Am. Geol., vol. xix, pp. 1-15, pl. 1, 1897.
Gives a sketch of his life and a list of his published writings.

294 —— The eastern lobe of the ice sheet.
Am. Geol., vol. xx, pp. 27-33, 1897.
Describes recent observations in the Adirondack region.

295 —— The southern lobe of the Laurentian ice sheet.
Brit. Assoc. Adv. Sci., Rept. 1897, pp. 653-654, 1898.
Contains a brief discussion of the extent of the ice sheet in northern United States.

296 —— [Review of "Annual Report of the Geological Survey of Canada for the calendar year 1894, new series, vol. vii."]
Science, new series, vol. v, pp. 621-624, 1897.

297 **Hobbs** (William H.). Note on the geology of southwestern New England.
Jour. of Geol., vol. v., pp. 175-177, 1897.
Describes observations of the structure in southwestern Massachusetts and northwestern Connecticut, and its bearing on the correlation of the Canaan limestone with the Stockbridge, the Riga schist with the Berkshire schist, and the Egremont limestone with the Bellowspipe limestone.

298 **Hollick** (A.). [Review of "Stratigraphy and paleontology of the Laramie and related formations in Wyoming" by T. W. Stanton and F. H. Knowlton.]
Torrey Bot. Club., Bull., vol. xxiv, p. 26 (½ p.), 1897.

299 —— A new fossil grass from Staten Island [New York].
Torrey Bot Club., Bull., vol. xxiv, pp. 122-124, 1897.
Describes a new species from the Tertiary beds.

300 —— [Review of "Nature, structure, and phylogeny of Dæmonelix," by E. H. Barbour.]
Torrey Bot. Club, Bull., vol. xxiv, pp. 266-267, 1897.

301 —— [Review of "Age of the lower coals of Henry County, Missouri," by David White.]
Torrey Bot. Club, Bull., vol. xxiv, pp. 316-317, 1897.

302 —— A new fossil Monocotyledon from the Yellow gravel at Bridgeton, N. J.
Torrey Bot. Club, Bull., vol. xxiv, pp. 329-331, pls. 311-313, 1897.
Describes a new species from the Tertiary beds.

303 **Hoover** (Herbert C.). Geology of the Four Mile placer mining district, Colorado.
Eng. and Mg. Jour., vol. lxiii, p. 510, 1897.
Describes the placer mines and discusses the origin of the gold.

304 **Hopkins** (T. C.). Brownstones of Pennsylvania.

U. S. Geol. Surv., 18th Ann. Rept., Pt. V (cont.), pp. 1025–1043, 1897.

Describes the chemical and mineralogic composition and geologic occurrence of the brownstones.

305 —— Origin of conglomerates of western Indiana.

Abstract, Geol. Soc. Am., Bull., vol. viii. pp. 14–15, 1897.

Discusses the origin of the Carboniferous conglomerate.

306 —— Styolites.

Am. Jour. Sci., 4th ser., vol. iv, pp. 142–144, 1897; Stone, vol. xv, pp. 137–139, 1897.

Describes their occurrence and origin.

307 —— The building materials of Pennsylvania. I, Brownstones.

Pa. State College, Ann. Rept. for 1896, Appendix 122 pp., 26 pls., 9 figs., 1897; Stone, vol. xv, pp. 147–155, 257–265, 364–369, 1897.

Describes the general characteristics of brownstones, their lithologic and chemical characters in Pennsylvania, and their character and distribution in other parts of the United States.

308 —— and **Siebenthal** (C. E.). The Bedford oolitic limestone of Indiana.

Ind. Dept. of Geol. and Nat. Res., 21st Ann. Rept., pp. 291–427, pls. xix–xxxviii, 1897; U. S. Geol. Surv., 18th Ann. Rept., Pt. v (Cont.) pp. 1050–1057, 1897; Review by J. C. Branner, Jour. of Geol., vol. v, pp. 529–531, 1897.

Describes the general stratigraphic, structural and economic features of the Bedford limestone. Includes a description of the local occurrences, a discussion of the origin of oolitic limestones, a bibliography and geologic map.

309 **Hosea** (R. M.). The Newcastle mines [Colorado].

Colliery Engineer, vol. xvii, pp. 377–382, 425–429, 13 figs., 1897.

Describes the character and occurrence of coal in these mines and the methods of working.

310 **Hovey** (E. O.). A relatively acid dike in the Connecticut Triassic area.

Am. Jour. Sci., 4th ser., vol. iv, pp. 287–292, figs. 1–3, 1897.

Describes the occurrence of the dikes, and the petrographic characters and chemical composition of the dike rock. Presents a geological map.

I.

311 **Iddings** (J. P.). [Review of "The ancient volcanic rocks of South Mountain, Pennsylvania," by Florence Bascom.]

Jour. of Geol., vol. v, pp. 213–216, 1897.

J.

312 **James** (Joseph F.). Manual of the paleontology of the Cincinnati group, Part VIII.

Cin. Soc. Nat. Hist., Proc., vol. xix, pp. 99–118, 1897.

Continues the paper in vol. xviii, p. 140. See Bibliography and Index for 1896, No. 360.

313 **Jefferson** (Mark S. W.). The antecedent Colorado.

Science, new ser., vol. vi, pp. 293-295, 1897.

Discusses the origin of the Colorado River.

314 **Johnson** (Guy R.). The Embreville estate, Tennessee.

Am. Inst. Mg. Engrs., Trans, vol. xxvi, pp. 138-144, 1897; Eng. and Mg. Jour., vol. lxi, p. 540, 1897.

Describes the geology of the region and the occurrence of the iron ores.

315 **Johnson** (W. S.), **Gwillim** (J. C.) and. Some ores and rocks of southern Slocan division, West Kootenay, British Columbia.

See Gwillim (J. C.) and Johnson (W. S.) No. 257.

316 **Jopling** (James E.). The Marquette range, its discovery, development, and resources.

Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 541-555, figs. 1-11, 1898.

Includes brief notes on the iron-ore bodies and cross sections.

317 **Jordan** (David S.). Richard Owen.

Pop. Sci. Mo., vol. li, pp. 259-265. 1897.

Gives a sketch of the life and character of Richard Owen.

K.

318 **Keith** (Arthur). Wartburg folio, Tennessee.

U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 40, 1897.

Describes the topographic features and geologic history of the quadrangle, the character and occurrence of the Carboniferous rocks, the geologic structure, and the occurrence of coal and petroleum. Includes topographical and geological maps.

319 **Kemp** (James Furman). The Leucite hills of Wyoming.

Geol. Soc. Am., Bull., vol. viii, pp. 169-182, pl. 14, 1897.

Describes the geology of the hills and the petrographic and chemical characters of the rocks.

320 —— Physiography of the eastern Adirondacks in the Cambrian and Ordovician periods.

Geol. Soc. Am., Bull., vol. viii, pp. 408-412, pl. 51, 1897.

Describes the physiographic features of the region during Cambrian and Ordovician time.

321 —— The geology of the magnetites near Port Henry, N. Y., and especially those of Mineville.

Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 146-203, pls. i-ix, figs. 1-12, 1898.

Describes the general geologic features of the region, the occurrence, character, chemical composition, relations, and origin of the nontitaniferous ore bodies. Includes a bibliography of the subject.

322 **Keyes** (Charles Rollin). [Review of "Eocene deposits of the Middle Atlantic slope in Maryland, Delaware, and Virginia," by W. B. Clark.]

Jour. of Geol., vol. v, pp. 310-312, 1897.

323 **Keyes** (Charles Rollin). Dual character of the Kinderhook fauna.

Am. Geol., vol. xx, pp. 167-176, 1897.

Discusses the character of the Kinderhook fauna and its bearing on the evidence of the line separating the Carboniferous and Devonian systems.

324 —— Memorial of Charles Wachsmuth.

Iowa Acad. Sci., Proc., vol. iv, pp. 13-16, 1897.

Gives a sketch of his life.

325 —— Stages of the Des Moines or chief coal-bearing series of Kansas and southwest Missouri and their equivalents in Iowa.

Iowa Acad. Sci., Proc., vol. iv, pp. 22-25, 1897.

Discusses the succession of the beds of the coal-bearing series of the region and compares them with the series in Iowa.

326 —— Relation of the Devonian and Carboniferous in the Upper Mississippi Valley.

St. Louis Acad. Sci., Trans., vol. vii, pp. 357-369, 1897.

Discusses the separation of the Carboniferous and Devonian formations. Describes the section at Louisiana, Missouri, and gives a list of fossils.

327 —— A new method of synchronizing strata.

Science, new ser., vol. vi, pp. 655-656, 1897.

Discusses principles of geologic correlation.

328 —— Distribution and character of Missouri clays.

Mineral Industry for 1896, pp. 127-137, 1897.

329 —— Central Maryland granites III.

Stone, vol. xiv, pp. 126-129, 226-228, 1897.

Describes their character and occurrence.

330 —— Biennial report of the State Geologist [Missouri].

Am. Geol., vol. xix, p. 350 (½ p.), 1897.

Review by U. S. G[rant].

331 —— and **Rowley** (R. R.). Vertical range of fossils at Louisiana [Missouri].

Iowa Acad. Sci., Proc., vol. iv, pp. 26-40, 1897.

Describes the section at this locality and gives a list of fossils. Discusses the faunal characters of the Lower Carboniferous and the occurrence of Devonian forms in the lower portion of the Kinderhook group.

332 **Kimball** (James P.). Physiographic geology of the Puget Sound Basin [Washington].

Am. Geol., vol. xix, pp. 225-237, 304-322, pls. xii, xix, 1897.

Describes the physiographic and orographic changes that have occurred in the region and the character and structure of the Cretaceous, Tertiary, and Pleistocene strata, with remarks on the glacial phenomena. Mentions the occurrence of coal.

333 **Kimball** (James P.). Secondary occurrences of magnetite on islands of British Columbia by replacement of limestone and by weathering of eruptives.

Am. Geol., vol. xx, pp. 13-27, pls. ii-iii, 1897.

Discusses the theory of replacement, and describes the occurrence and character of ore bodies in the region named.

334 —— On the magnetite belt at Cranberry, North Carolina, and notes on the genesis of iron ore in general in crystalline schists.

Am. Geol., vol. xx, pp. 299-312, pl. xviii, 1897.

Describes the character and form of the ore deposits, and discusses the origin of this and similar ore bodies. Gives chemical analyses of the ore.

335 **Kindle** (Edward M.). The relation of the fauna of the Ithaca group to the faunas of the Portage and Chemung.

Am. Geol., vol. xix, pp. 140-141, 1897.

Review by T. L. W[atson].

336 —— Pleistocene fossils from Baffinland and Greenland.

Science, new ser., vol. v, pp. 91-93, 1897.

Gives lists of species determined and describes their occurrence.

337 **Kingsley** (J. S.). The systematic position of the trilobites. With remarks by C. E. Beecher.

Am. Geol., vol. xx, pp. 33-40, 1897.

Discusses the characteristics of and position to which trilobites should be assigned. Includes a partial bibliography.

338 —— Edward Drinker Cope.

Am. Nat., vol. xxxi, pp. 414-419, 1897.

Gives an account of the life and works of Prof. Cope.

339 **Klittke** (M.). Die geologische Landesan fuahme der Dominion of Canada.

Zeit. prak. Geol., Heft 4, pp. 117-144, 1897.

340 **Knapp** (George N.), **Salisbury** (R. D.) and. Surface geology. Report of progress [New Jersey].

See Salisbury (R. D.) and Knapp (G. N.), No. 522.

341 **Knapp** (M. A.). The coal fields of Esmeralda County, Nevada.

Mg. and Sci. Press, vol. lxxiv, p. 138, 1897.

Describes the character and occurrence of the coal-bearing strata.

342 **Knight** (W. C.) The geology of the Popo Agie, Lander, and Shoshone oil fields [Wyoming].

Wyoming Univ., School of Mines, Petroleum ser., Bull. No. 2, 20 pp., 1897.

Describes the general geology of the region.

343 —— The petroleum fields of Wyoming.

Mineral Industry for 1896, pp. 442-450, 1897.

Describes the geologic features of the region and the occurrence of the oil.

344 **Knowlton** (F. H.). Report on a collection of fossil plants from the Yukon River, Alaska, obtained by Mr. J. E. Spurr and party during the summer of 1896.

U. S. Geol. Surv., 18th Ann. Rept., Pt. III, pp. 194-196, 1898.

Gives a list of the fossils collected and discusses their bearing on the age of the beds.

345 —— The fossil plants of the Payette formation [Idaho].

U. S. Geol. Surv., 18th Ann. Rept., Pt. II, pp. 721-736, pls. xcix-cii, 1898.

Describes a number of new species from this formation and discusses their bearing on its age.

346 —— [Review of "The flora of the Amboy clays" by J. S. Newberry, edited by Arthur Hollick.]

Torrey Bot. Club, Bull., vol. xxiv, pp. 94-96, 1897.

347 —— **Stanton** (T. W.) and. Stratigraphy and paleontology of the Laramie and related formations in Wyoming.

See Stanton (T. W.) and Knowlton (F. H.), No. 580.

348 **Krusch** (P.). Goldvorkommen in Minnesota mit besonderer Berücksichtigung des Rainy Lake district.

Zeit. fur prak., Geol., Heft 3, pp. 92-94, 1897.

See No. 548, Bull., U. S. Geol. Surv., No. 146.

349 **Kümmel** (Henry B.). The Newark system. Report of progress. [New Jersey.]

N. J. Geol. Surv., Rept. 1896, pp. 27-88, pl. viii, 1897.

Describes the topography of the Newark area, the lithologic character and distribution of the Stockton, Lockatong, and Brunswick series and of the trap rocks, and discusses the structure of the region.

350 —— The Newark system of New Jersey.

Jour. of Geol., vol. v, pp. 541-562, 1897: Review by N. H. W[inchell], Am. Geol., vol. xx, pp. 134-135, 1897.

Describes the physiography of northwestern New Jersey, the character and occurrence of the Newark strata, and their geologic structure. Presents a geologic map of the region.

351 —— [Review of "Elementary geology," by Ralph S. Tarr.]

Jour. of Geol., vol. v, pp. 317-318, 1897.

352 **Kunz** (George F.). On the sapphires from Montana, with special reference to those from Yogo gulch, in Fergus County.

Am. Jour. Sci., 4th ser., vol. iv, pp. 417-420, 1897.

Describes their character and occurrence.

353 —— The genesis of the diamond.

Science, new ser., vol. vi, pp. 450-456, 1897.

Discusses the origin of diamonds in a review of Prof. Lewis's papers on the "Genesis and matrix of the diamond."

L.

354 **Lakes** (Arthur). Sketch of a portion of the Gunnison gold belt, including the Vulcan and Mammoth Chimney mines [Colorado].
Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. 440–448. figs. 1–2, 1897.

355 —— Common freaks of nature.
Colliery Eng., vol. xvii. pp. 239–240, 1897.
Describes the occurrence and origin of concretionary structures.

356 —— Peculiar formations in the San Juan region [Colorado].
Colliery Eng., vol. xvii, pp. 350–352, 3 figs., 1897.
Describes the character and occurrence of the San Miguel conglomerate and the San Juan formation.

357 —— Rico mining district [Colorado].
Colliery Eng., vol, xvii, pp. 359–360, 6 figs., 1897.
Describes the occurrence of the gold and silver mines of the district.

358 —— Mining sketches [Colorado].
Colliery Eng., vol. xvii, pp. 383–388, 20 figs., 1897.
Describes the general geologic features of portions of the San Juan region.

359 —— Ore shoots of Cripple Creek [Colorado].
Colliery Eng., vol. xvii, pp. 481–482, 4 figs., 1897.
Describes the occurrence of the ore veins at Cripple Creek.

360 —— The La Plata mountains [Colorado].
Colliery Eng., vol. xvii, pp. 74–77, 101–103, 18 figs., 1897.
Describes the geologic and ore deposits of the region.

361 —— A study of vein formation as illustrated in Clear Creek canyon, Colorado
Colliery Eng., vol. xvii, pp. 109–110, 10 figs., 1897.
Describes the occurrence and character of the veins.

362 —— A sketch of the mining fields of British Columbia and the great Northwest.
Colliery Eng., vol. xviii, pp. 152–157, 3 figs., 1897.
Describes the general geologic features and ore deposits of the region.

363 —— A mountain placer [Colorado].
Colliery Eng., vol. xviii, pp. 193–195, 5 figs., 1897.
Describes the character and occurrence of a placer in South Park, Colorado.

364 —— Local restriction and distribution of certain ores.
Colliery Eng., vol. xviii, p. 225, 1897.
Remarks on the local occurrences of minerals.

365 —— "Nigger heads," turtle stones, etc., explained.
Stone, vol. xiv, pp. 271–274, 1897.

366 **Lakes** (Arthur). The undeveloped economic resources of Colorado.

Stone, vol. xiv, pp. 358-369, 1897.

Gives a description of the geologic features of portions of Colorado and their economic resources.

367 **Lane** (Alfred C.). Grain of rocks.

Abstract, Geol. Soc. Am., Bull., vol. viii, pp. 403-407, 1897.

Describes the effect of the rate of cooling on the grain of rocks.

368 —— Nature's concentrators.

Eng. and Mg. Jour., vol lxiii, pp. 542-543, 1897.

Discusses the origin of ore deposits.

369 **Lawson** (Andrew C.). The geology of San Francisco peninsula [California].

Jour. of Geol., vol. v, pp. 173-174, 1897.

Reviews certain criticisms on the author's paper on this subject.

370 **Leach** (J. C.). Report of the State natural gas supervisor [Indiana].

Ind. Dept. of Geol. and Nat. Res., 21st Ann. Rept., pp. 428-456, 1897.

Describes the conditions of the gas industry and discusses the origin and occurrence of natural gas.

371 **Le Conte** (Joseph). Earth-crust movements and their causes.

Geol. Soc. Am., Bull., vol. viii, pp. 113-126; Science, new ser., vol. v., pp. 321-330, 1897.

Describes the causes and character of earth movements.

372 **Leonard** (A. G.). Lead and zinc deposits of Iowa.

Iowa Geol. Surv., vol. vi, pp. 11-66, 1897.

See Bibliography and Index for 1896, No. 441.

373 —— Natural gas in the drift of Iowa.

Iowa Acad. Sci., Proc., vol. iv, pp. 41-47, 1897.

Describes its occurrence at various localities and discusses its origin.

374 **Leverett** (Frank). Water resources of Indiana and Ohio.

U. S. Geol. Surv., 18th Ann. Rpt., Pt. IV, pp. 425-559, pls. xxxiii-xxxvii, figs. 76-77, 1897; Review by W. H. Norton, Jour. of Geol., vol. v, pp. 206-208; Review, Am. Geol., vol. xix, pp. 418-419, 1897.

Describes the physiography, glacial history, drainage systems, and water supply of these states.

375 —— The Pleistocene features and deposits of the Chicago area [Illinois].

Chicago Acad. Sci., Bull., No. 2, 86 pp., pls. 1-4, figs. 1-8, 1887; Review by E. W. C[laypole], Am. Geol., vol. xx, p. 57, 1897.

Describes the physiography and glacial deposits and pheuomena of the region.

376 —— [Review of "The Glacial Lake Agassiz" by Warren Upham.]

Am. Geol., vol. xx, pp. 324-328, 1897.

377 **Leverett** (Frank). Changes in drainage in southern Ohio.

Denison Univ., Sci. Lab., Bull., vol. ix, pt. II, pp. 18-21, 1897.

Describes an abandoned valley in southern Ohio.

378 **Lewis** (Henry Carvill). Papers and notes on the genesis and matrix of the diamond.

Review by N. H. Winchell, Am. Geol., vol. xx, pp. 57-59, 1897.

379 **Lewis** (J. F.). The Chicago main drainage channel.

Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 288-332, figs. 1-24, 1897.

Includes notes on the glacial geology of the region.

380 **Lewis** (Joseph Volney). Corundum and the basic magnesian rocks of western North Carolina.

N. C. Geol. Surv., Bull., No. 11, 167 pp., 6 pls., 8 figs., 1896.

Describes the character and distribution of the peridotites and associated rocks, and the occurrence and distribution of corundum in the state. Includes a bibliography of the literature of the corundum belt and a geological map of western North Carolina.

381 **Lindahl** (Josua). Description of a Devonian Ichthyodorulite, Heteracanthus uddeni, n. sp., from Buffalo, Iowa.

Cin. Soc. Nat. Hist., Jour., vol. xix, pp. 95-98, pl. vi, 1897.

Describes a new species and gives an emended description of the genus.

382 **Lindgren** (Waldemar). The mining districts of the Idaho basin and the Boise Ridge, Idaho. With a report on the fossil plants of the Payette formation by Frank Hall Knowlton.

U. S. Geol. Surv., 18th Ann. Rept., Pt. III, pp. 625-736, pls. lxxxviii-cii, figs. 55-65, 1898.

Describes the general geologic history and the occurrence and character of the ore deposits and of the Tertiary and Pleistocene strata. Includes a report on the fossil plants of the Payette formation.

383 —— Truckee folio, California.

U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 39, 1897.

Describes the geologic history and topography of the gold-belt region, the occurrence and character of the Bed Rock series, the Carboniferous, Jura-Trias?, Neocene, and Pleistocene strata, the character of the igneous rocks and the Glacial history of the region. Includes topographic and geologic maps.

384 —— The granitic rocks of the Pyramid Peak district, Sierra Nevada, Cal.

Am. Jour. Sci., 4th ser., vol. iii, pp. 301-314, fig. 1, 1897.

Describes briefly the character and distribution of the Carboniferous and Jura-Trias strata, the petrographic characters of the granite, gabbro, diorite, and granodiorite. Gives chemical analyses of the granite and a geological map.

385 —— Monazite from Idaho.

Am. Jour. Sci., 4th ser., vol. iv, pp. 63-64, 1897; Abstract, Eng. and Mg. Jour., vol. lxiv, p. 69, 1897; Mg. and Sci. Press, vol. lxxv, p. 168, 1897.

Describes the occurrence of Monazite.

386 **Lindgren** (Waldemar). The granitic rocks of the Sierra Nevada.
Abstract, Science, new ser., vol. v, p. 361, 1897.

387 —— Filling and replacement in gold-bearing fissure veins.
Eng. and Mg. Jour , vol. lxiii, p. 573, 1897.
Describes the alteration of country rock, the process of silicification, and the structure of veins.

388 **Logan** (W. N.). The upper Cretaceous of Kansas. With an introduction by Erasmus Haworth.
Kan. Univ. Geol. Surv., vol. i, pp. 197-234, pls. xxv-xxxiv, 1897.
Describes the general character and relations of the upper Cretaceous beds and the distribution and lithologic and faunal characters of the Dakota, Benton, and Niobrara subdivisions.

389 —— Some new cirriped crustaceans from the Niobrara Cretaceous of Kansas.
Kan. Univ. Quart., vol. vi, pp. 187-189, 1897.
Describes several new species.

390 **Low** (A. P.). The Labrador area.
Ottawa Nat., vol. x, pp. 208-216, 1897.
Notes discovery of iron-bearing Cambrian deposits.

M.

391 **Macbride** (T. H.). A pre-Kansan peat bed.
Iowa Acad. Sci., Proc., vol. iv, pp. 63-66, 1897.
Describes the occurrence in drift beds at Oelwein, Iowa.

392 **McCalley** (Henry). Report on the Valley regions of Alabama (Paleozoic strata) Part I. On the Tennessee Valley region.
Jour. of Geol., vol. v, pp. 307-308, 1897.
Review by Stuart Weller.

393 —— The Coosa Valley region [Alabama].
Ala. Geol. Surv., Rept. on the Valley regions of Alabama. Pt. II, 862 pp., 35 pls., 18 figs., 1897. Review by T. C. C[hamberlin], Jour. of Geol., vol. v, pp. 646-647, 1897; Review by C. W. Hayes, Science, new ser., vol. vi, p. 296, 1897.
Describes the general physiographic features, geologic structure and formations, and occurrence of economic minerals, and gives detailed descriptions by counties.

394 —— The hematites of Alabama geologically considered.
Eng. and Mg. Jour., vol. lxiii, pp. 43-44, 1897.
Describes the geologic occurrence of the hematites and gives a section of Red Mountain.

395 —— The fluxing rocks of Alabama geologically considered.
Eng. and Mg. Jour., vol. lxiii, pp. 115-116, 1897.
Describes the occurrence of Carboniferous, Silurian, and Cambrian limestones.

396 **McGee** (W J). Sheetflood erosion.
Geol. Soc. Am., Bull., vol. viii, pp. 87-112, pls. 10-13, 1897.
Describes the erosion of the Sonoro district, Mexico.

397 —— [Review of "Elementary geology," by Ralph S. Tarr.]
Nat. Geog. Mag., vol. viii, pp. 59-60, 1897.

398 —— [Review of "An introduction to geology," by W. B. Scott.]
Nat. Geog. Mag., vol. viii, pp. 91-92, 1897.

399 —— [Review of "Glaciers of North America," by Israel C. Russell.]
Nat. Geog. Mag., vol. viii, pp. 124-125, 1897.

400 —— [Review of "A treatise on rocks, rock weathering, and soils," by George P. Merrill.]
Nat. Geog. Mag., vol. viii, pp. 126-127, 1897.

401 **Maas** (G.). [Review of "Geological and petrographical studies of the Sudbury nickel district in Canada," by T. L. Walker.]
Zeit. fur prak. Geol., Heft 8, pp. 297-300, fig. 85, 1897.

402 **Mabery** (Charles F.). On the composition of American petroleum.
Am. Phil. Soc., Proc., vol. xxxvi, pp. 126-136, 1897.
Discusses the chemical composition of petroleum.

403 **Marcou** (Jules). Jura and Neocomian of Arkansas, Kansas, Oklahoma, New Mexico, and Texas.
Am. Jour. Sci., 4th ser., vol. iv, pp. 197-212, 1897.
Discusses the classification and stratigraphy of the formations in the States named.

404 —— Rules and misrules in stratigraphic classification.
Am. Geol., vol. xix, pp. 35-47, 1897.
Reviews the history of geological classification and nomenclature and discusses the classification of Cambrian and Silurian formations of eastern North America adopted by other writers.

405 —— Rules and misrules in stratigraphic nomenclature.
Am. Geol., vol. xix, pp. 111-131, 1897.
Discusses the classification and nomenclature of various geologic formations.

406 —— Note on "The easternmost volcanoes of the United States."
Science, new ser., vol. vi, pp. 667-668, 1897.
Refers to certain statements in a paper by R. T. Hill on this subject.

407 **Marsh** (Othniel C.). The skull of Protoceras.
Geol. Mag., Dec. 4, vol. iv, pp. 433-439, pl. xix, figs. 1-2, 1897.

408 —— Affinities of Hesperornis.
Am. Jour. Sci., 4th ser., vol. iii, pp. 347-348, 1897.

409 —— The Stylinodonta, a suborder of Eocene edentates.
Am. Jour. Sci., 4th ser., vol. iii, pp. 137-146, 9 figs., 1897.
Describes and figures Stylinodon mirus and discusses the origin of the edentates.

410 **Marsh** (Othniel C.). Principal characters of the Protoceratidæ. Part I.

Am. Jour. Sci., 4th ser., vol. iv, pp. 165–176, pls. ii–vii, figs. 1–7, 1897.

Discusses the characters of Protoceras and Calops.

411 —— The Dinosaurs of North America.

Jour. of Geol., vol. v, pp. 87–88, 1897.

Reviewed by E. C. C[ase].

412 —— Dinosaurs.

Sci. Am. Suppl., vol. xliii, pp. 17828–17829, figs. 1–7, 1897.

Extract from 16th Annual Report of the U. S. Geological Survey.

412*a* **Mathews** (Edward B.). Bibliography and cartography of Maryland, including publications relating to the physiography, geology, and mineral resources.

Md. Geol. Surv., vol. i, pp. 229–401, 1897.

413 —— [Review of "Tables for the determination of minerals by physical properties ascertainable with the aid of a few field instruments based on the system of Prof. Dr. Weisbach," by Persifor Fraser.]

Science, new ser., vol. v, pp. 624–625, 1897.

414 **Matthew** (G. F.). What is the Olenellus fauna?

Am. Geol., vol. xix, pp. 396–407, 1897.

Discusses the relations of the Olenellus and Paradoxides faunas.

415 —— Abraham Gesner. A review of his scientific work.

New Brunswick Nat. Hist. Soc., Bull., No. xv, pp. 3–48, 1897.

Reviews the scientific publications of Gesner and includes his geological map of New Brunswick.

416 —— Description of an extinct Paleozoic insect and a review of the fauna with which it occurs.

New Brunswick Nat. Hist. Soc., Bull., No. xv, pp. 49–60, pls. i–ii, figs. 1–4, 1897.

Describes a new species and gives an account of the associated forms.

417 —— Some characteristic genera of the Cambrian.

Brit. Assoc. Adv. Sci., Rept. 1897, pp. 657–658, 1898.

Gives a summary of the relations of the various genera.

418 **Matthew** (W. D.). A revision of the Puerco fauna.

Am. Mus. Nat. Hist., Bull., vol. ix, pp. 259–323, 20 figs., 1897.

Reviews the characters of the fauna described from these beds and describes three new species.

419 —— Development of the foot in the Palæosyopinæ.

Am. Nat., vol. xxxi, pp. 57–58, 1897.

Gives notes on Palæosyops borealis Cope.

420 —— Notes on intrusive rocks near St. John, N. B., Canada.

New Brunswick Nat. Hist. Soc., Bull., No. xv, pp. 61–64, 1897.

Gives brief notes on the petrographic characters of the intrusive rocks.

421 **Maynard** (George W.). The chromite deposits of Port au Port Bay, Newfoundland.

Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 283-288, 1898.

Describes the occurrence of chrome ores in this region.

422 **Mendenhall** (T. C.). Life and letters of William Barton Rogers.

Science, new ser., vol. vi, pp. 1-9, 1897.

Gives a sketch of the life of Prof. Rogers.

423 **Mercer** (Henry C.). The finding of the remains of the fossil sloth at Big Bone Cave, Tennessee, in 1896.

Am. Phil. Soc., Proc., vol. xxxvi, pp. 36-70, 26 figs., 1897.

Describes the character of the remains and the strata in which they were found.

424 **Merriam** (John C.). The geologic relations of the Martinez group of California at the typical locality.

Jour. of Geol., vol. v, pp. 767-775, 1897.

Describes the character and relations of the group and gives a list of fossils. Discusses the evidence for the separation of the group.

425 —— New species of Tertiary mollusca from Vancouver Island [British Columbia].

The Nautilus, vol. xi, pp. 64-65, 1897.

Describes a number of new species.

426 **Merrill** (F. J. H.). Geology of the vicinity of greater New York.

Abstract, Science, new ser., vol. vi, pp. 815-816, 1897.

427 —— Road materials and road building in New York.

N. Y. State Mus., Bull., vol. iv, pp. 91-131, pls. i-xiv, 1897.

Includes a brief description of some of the road materials in New York.

428 **Merrill** (George P.). A treatise on rocks, rock weathering, and soils.

The Macmillan Co., New York, 8vo., xx and 411 pp., 25 pls., 42 figs., 1897.

Review by U. S. G[rant], Am. Geol., vol. xx, pp. 273-274, 1897; Review by W J M[cGee], Nat. Geog. Mag., vol. viii, pp. 126-127, 1898; Review by W. J. Woodworth, Science, new ser., vol. v, pp. 995-997, 1897.

429 —— Weathering of micaceous gneiss in Albemarle County, Virginia.

Geol. Soc. Am., Bull., vol. viii, pp. 157-168, 1897.

Describes the petrographic and chemical characters of the rock and the process of weathering.

430 **Miller** (H. H.). The Segovia gold region of Nicaragua.

Eng. and Mg. Jour., vol. lxiv, pp. 335-336, figs. 1-5, 1897.

Describes the geologic features and the occurrence of the ore bodies.

431 **Miller** (S. A.) and **Gurley** (William F. E.). New species of crinoids, cephalopods, and other Paleozoic fossils.

Ill. State Mus. Nat. Hist., Bull., No. 12, 69 pp., 5 pls., 1897.

Describes new species mainly from the Lower Carboniferous rocks of the Central Mississippi valley states and Montana.

432 **Miller** (Willet G.). On some nickeliferous magnetites.
Brit. Assoc. Adv. Sci., Rept. 1897, pp. 660-661 (½ p.), 1898.
Brief note on an occurrence in Ontario.

433 **Minot** (Charles Sedgwick). Cephalic homologies. A contribution to the determination of the ancestry of vertebrates.
Am. Nat., vol. xxxi, pp. 927-943, 1897.
Discusses the ancestry of vertebrates.

434 **Morris** (Marshall). Kentucky bituminous rock.
Eng. and Mg. Jour., vol. lxiii, p. 46, 1897.
Describes its use for road making and gives a chemical analysis.

435 **Mudge** (E. H.). Some features of pre-Glacial drainage in Michigan.
Am. Jour. Sci., 4th ser., vol. iv, pp. 383-386, 1897.
Discusses the evidences of the character and extent of pre-Glacial drainage in Michigan.

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436 **Nason** (Frank L.). British Columbia. The Big Bend district, West Kootenay.
Eng. and Mg. Jour., vol. lxiii, pp. 453-454, 1897.
Describes occurrence of gold in the district.

437 **Nevius** (J. Nelson). Kaolin in Vermont.
Eng. and Mg. Jour., vol. lxiv, p, 189, figs. 1-2, 1897.
Describes a koalin deposit at South Wallingford, Vt.

438 **Newberry** (J. S.). The flora of the Amboy clays. Edited by Arthur Hollick.
Torrey Bot. Club, Bull., vol. xxiv, pp. 94-96, 1897.
Review by F. H. K[nowlton].

439 **Newsome** (John F.) and **Branner** (John C.). The Red River and Clinton monoclines [Arkansas].
Am. Geol., vol. xx, pp. 1-13, pl. i, figs. 1-3, 1897.
Describes the general physiographic features and the character and geologic structure of the region in which the monoclines occur.

440 **Nichols** (H. W.). On the genesis of claystones.
Am. Geol., vol. xix, pp. 324-329, 1897.
Discusses the origin and formation of claystones.

441 **Nicolson** (John T.), **Adams** (Frank D.) and. Preliminary notice of some experiments on the flow of rocks.
See Adams (F. D.) and Nicolson (J. T.), No. 8.

442 **Nitze** (Henry B. C.). Some late views of the so-called Taconic and Huronian rocks in central North Carolina.
Elisha Mitchell Sci. Soc., Jour., 1896, Pt. II, pp. 53-72, 1896.
Reviews the literature on the subject.

443 —— The limonites of Cherokee County, North Carolina.
Eng. and Mg. Jour., vol. lxiii, pp. 330-331, 1897.
Describes occurrence and distribution in southwest North Carolina.

444 **Nitze** (Henry B. C.). The genesis of the gold ores in the central slate belt of the Carolinas.

Eng. and Mg. Jour., vol. lxiii, pp. 628–629, 1897.

Describes the character of the country rock, the structure of the deposits, and the formation and filling of the fissure openings.

445 —— and **Hanna** (George B.). Gold deposits of North Carolina.

N. C. Geol. Surv., Bull. No. 3, 200 pp., 14 pls., 19 figs., 1896.

Describes the occurrence, character, and age of the gold-bearing rocks, and gives local details of the occurrence of gold at the various mines. Discusses the genesis of the gold ores. Includes geological map of the State.

446 **Norton** (William Harmon). Artesian wells of Iowa.

Iowa Geol. Surv., vol. vi, pp. 115–428, pls. v–xxiv, figs. 29–43, 1897.

Describes the requisite conditions of artesian wells, the geologic features of the Iowa artesian field, the records of numerous wells, and the chemical characters of the artesian waters. Includes a bibliography.

447 —— [Review of "Water resources of Illinois," by Frank Leverett.]

Jour. of Geol., vol. v, pp. 206–208, 1897.

448 **Noyes** (W. A.). Composition of Indiana coals.

Ind. Dept. of Geol. and Nat. Hist., 21st Ann. Rept., pp. 97–107, 1897.

Describes the methods of analyses and in tabular form shows the chemical composition of coal from various mines.

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449 **Ogilvie** (W. M.). Gold mining in the Yukon district [British Columbia].

Can. Mg. Rev., vol. xvi, pp. 168–170, 1897.

Describes the topography and drainage of the region and the occurrence of the placers.

450 **Ordonez** (Ezequiel). Itinerarios geologicos.

Inst. Geol. de Mexico, Bulls. Nos. 4–6, pp. 30–77, 1897.

Describes geologic features in different parts of Mexico, including occurrences of Pleistocene strata and the character of igneous rocks.

451 —— Rocas eruptivas [Mexico].

Inst. Geol. de Mexico, Bulls. Nos. 4–6, pp. 253–270, 1897.

Describes the occurrence and general characters of the eruptive rocks of Mexico.

452 —— Descripcion de las rocas [Sierra de Pachuca, Mexico].

Inst. geol. de Mexico, Bulls. Nos. 7–9, pp. 99–126, pl. vi, 1897.

Describes the volcanic rocks of the region.

453 —— **Aguilera** (J. G.) and. Fisiografia de la Sierra de Pachuca [Mexico].

See Aguilera (J. G.) and Ordonez (E.), No. 15.

454 —— —— Geologia general de la Sierra de Pachuca [Mexico].

See Aguilera (J. G.) and Ordonez (E.), No. 16.

455 **Ordonez** (Ezequiel), **Aguilera** (J. G.) and. Las vetas [Sierra de Pachuca, Mexico].
See Aguilera (J. G.) and Ordonez (E.), No. 17.

456 **Ortmann** (Arnold E.). The systematic position of Crangopsis vermiformis (Meek) from the sub-Carboniferous rocks of Kentucky.
Am. Jour. Sci., 4th ser., vol. iv, pp. 283–289, 1897.
Discusses its characters and the position to which it should be assigned.

457 —— On a new species of palinurid, genus Linuparus, found in the upper Cretaceous of Dakota.
Am. Jour. Sci., 4th ser., vol. iv, pp. 290–296, figs. 1–4, 1897.
Describes the characters of the Palinuridæ and of Linuparus atavus n. sp.

458 **Osborn** (Henry Fairfield). The Huerfano lake basin, southern Colorado, and its Wind River and Bridger fauna.
Am. Mus., Nat. Hist., Bull., vol. ix, pp. 247–258, 1897.
Reviews the literature on this region, describes the character and distribution of the beds, and gives notes on the fauna.

459 —— Reconstruction and model of Phenacodus primævus Cope.
Brit. Assoc. Adv. Sci., Rept. 1897, p. 684, (½ p.), 1898.
Gives a brief account of its relations.

460 —— The origin of the mammalia.
Brit. Assoc. Adv. Sci., Rept. 1897, pp. 686–687, 1898.
Discusses the relations of the subdivisions of the mammalia.

461 —— Lambdotherium not related to Palæosyops or the Titanotheres.
Am. Nat., vol. xxxi, pp. 55–57, 1897.
Describes Lambdotherium Cope and L. popoagicus Cope.

462 —— Wind River and Huerfano beds in the Huerfano lake basin.
Am. Nat., vol. xxxi, pp. 966–968, 1897.
Reviews the work of R. C. Hills on these beds, and gives the results of the author's observations.

463 —— Edward D. Cope.
Science, new ser., vol. v, pp. 705–717, 1897.
Gives a sketch of his life, character, and publications.

464 —— The Ganodonta or primitive edentates with enameled teeth.
Science, new ser., vol. v, pp. 611–612, 1897.
Describes their geographic distribution and osteologic characters.

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465 **Pearce** (Richard). Occurrence of Tellurium in Montana.
Abstract, Eng. and Mg. Jour., vol. lxiii, p. 117, 1897.

465*a* —— Tellurium from the Griffith lode, Colorado.
Abstract, Eng. and Mg. Jour., vol. lxiii, p. 139, 1897.

466 **Pearce** (Richard). Telluride gold ores.
Eng. and Mg. Jour., vol. lxiii, p. 376 (½ p.), 1897.
Brief note on the detection of tellurium in gold ores.

467 **Peckham** (S. F.). On the nature and origin of petroleum.
Am. Phil. Soc., Proc., vol. xxxvi, pp. 103–112, 1897.
Reviews recent literature on the subject and discusses the origin of bitumens.

468 **Penfield** (S. K.). On the chemical composition of hamlinite and its occurrence with bertrandite at Oxford County, Maine.
Am. Jour. Sci., 4th ser., vol. iv, pp. 313–316, 1897.
Describes the chemical and crystallographic characters of hamlinite and the crystallographic characters of bertrandite.

469 —— and **Foote** (H. W.). On bixbyite, a new mineral, and notes on the associated topaz.
Am. Jour. Sci., 4th ser., vol. iv, pp. 105–108, 1897.
Describes its crystallographic and chemical characters.

470 —— —— Note concerning the composition of ilmenite.
Am. Jour. Sci., 4th ser., vol. iv, pp. 108–110, 1897.
Describes the crystallographic and chemical characters of ilmenite.

471 **Penhallow** (D. P.). Contributions to the Pleistocene flora of Canada.
Canada Roy. Soc., Proc. and Trans., 2d ser., vol. ii, sect. iv, pp. 59–77, 1896.
Gives notes on the characters of the species, and in tabular form shows the extent and distribution of the flora.

472 —— Myelopteris topekansis, n. sp., a new Carboniferous plant.
Bot. Gazette, vol. xxiii, pp. 15–31, pls. ii–iii, 1897.
Describes a new species from the Carboniferous of Kansas.

473 **Penrose** (R. A. F., jr.). Geology and mining industry of the Cripple Creek district, Colorado.
See Cross (W.) and Penrose (R. A. F., jr.), No. 160.

474 **Phillips** (Francis C.). On the genesis of natural gas and petroleum.
Am. Phil. Soc., Proc., vol. xxxvi, pp. 116–121, 1897.
Discusses Mendeleeff's theory as to the origin of these products.

475 —— On the occurrence of petroleum in the cavities of fossils.
Am. Phil. Soc., Proc., vol. xxxvi, pp. 121–126, 1897.
Discusses the origin of petroleum oil found in the cavities of fossils.

476 **Phillips** (William B.). Mining low-grade gold ores in Alabama.
Eng. and Mg. Jour., vol. lxiv, pp. 185–186, figs. 1–6, 1897.
Describes the occurrence and character of certain ore bodies.

477 —— The southwestern extremity of the Appalachian gold fields.
Eng. and Mg. Jour., vol. lxiv, p. 398, 1897.
Describes the occurrence of gold in northern Alabama.

478 **Phillips** (William B.). The gold regions of Alabama, U. S. A.

North of Eng. Inst. Mg. and Mech. Engrs., Trans., vol. xlvii, pp. 19–23, figs. 1–2, 1897.

Describes the general character and occurrence of gold ores in this state.

479 **Pierce** (S. J.). The pre-Glacial Cuyahoga valley [Ohio].

Am. Geol., vol. xx, pp. 176–181, pl. xiii, 1897.

Presents the data of deep wells in the vicinity of Cleveland, Ohio, and discusses its bearing on the depth and origin of Cuyahoga valley.

480 **Pirsson** (Louis V.). On the corundum-bearing rocks from Yogo gulch, Montana.

Am. Jour. Sci., 4th ser., vol. iv, pp. 421–423, 1897.

Discusses the megascopic and microscopic characters of the rocks and the origin of the sapphites found in them.

481 —— **Weed** (W. H.) and. Geology and mineral resources of the Judith Mountains of Montana.

See Weed (W. H.) and Pirsson (L. V.) No. 674.

482 **Porter** (J. A.). The Smuggler-Union mines, Telluride, Colorado.

Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. 449–459, figs. 1–2, 1897.

Describes the occurrence and character of the gold and silver ores in these mines.

483 **Pratt** (J. H.). On the crystallography of the Montana sapphires.

Am. Jour. Sci., 4th ser., vol. iv, pp. 424–428, 2 pls., 1897.

Describes their crystallographic characters.

484 —— Notes on North Carolina minerals.

Elisha Mitchell Sci. So., Jour., 1897, pt. ii, pp. 61–83, figs. 1–5, 1897.

Includes crystallographic notes and chemical analyses of wellsite, chabazite, anorthite, anthophyllite, enstatite, beryl, cyanite, and zircon.

485 —— and **Foote** (H. W.). On wellsite, a new mineral.

Am. Jour. Sci., 4th ser., vol. iii, pp. 443–448, 1897.

Describes the crystallographic form and physical properties of a new mineral from North Carolina.

486 **Prosser** (Charles S.). Comparison of the Carboniferous and Permian formations of Nebraska and Kansas.

Jour. of Geol., vol. v, pp. 1–16, 148–172, 1897.

Reviews the previous work on these formations in Kansas and Nebraska. Discusses the character, succession, and correlation of the various subdivisions, and describes the lithologic and faunal characters of a number of sections.

487 —— The upper Permian and lower Cretaceous [Kansas].

Kan. Univ. Geol. Surv., vol. ii, pp. 51–194, pls. ix–xxiv, 1897.

Describes the character, occurrence, correlation, and classification of the upper Permian and lower Cretaceous beds of Kansas.

488 **Prosser** (Charles S.). The Permian and upper Carboniferous of southern Kansas.

Kan. Univ. Quart., vol. vi, pp. 149–175, pls. xviii–xix, 1897.

Describes several sections and discusses their correlation and faunal characters.

489 **Purdue** (A. H.). [Review of "The former extension of the Appalachians across Mississippi, Louisiana, and Texas," by J. C. Branner.]

Jour. of Geol., vol. v, pp. 759–760, 1897.

490 **Purington** (Charles Wells). Preliminary report on the mining industries of the Telluride quadrangle, Colorado.

U. S. Geol. Surv., 18th Ann. Rept., Pt. III, pp. 751–848, pls. ciii–cxviii, figs. 66–74, 1898.

Gives a general description of the sedimentary and igneous rocks, the fissures and vein systems, and the occurrence of the ore. Discusses the origin and age of the ore deposits.

491 —— Telluride mining district, Colorado.

Abstract, Science, new ser., vol. v, p. 890, 1897.

Gives brief notes on the geology of the region and the occurrence of the ores.

R.

492 **Rangel** (M.). Exploitacion de las minas [Sierra de Pachuca, Mexico].

Inst. Geol. de Mexico, Bulls. Nos. 7–9, pp. 127–141, 1897.

Describes the mining geology of the region.

493 **Ransome** (F. Leslie). The age of the California coast ranges.

Am. Geol., vol. xix, pp. 66–67, 1897.

Discusses briefly the relations of the Coast ranges and Great Valley of California in pre-Miocene time.

494 —— [Review of "The geology of Santa Catalina island," by W. S. T. Smith.]

Jour. of Geol., vol. v, pp. 208–210, 1897.

494*a* —— and **Turner** (H. W.). Sonoro folio, California.

See Turner (H. W.) and Ransome (F. L.), No. 621.

495 **Reid** (Harry Fielding). Variations of glaciers.

Jour. of Geol., vol. v, pp. 378–383, 1897.

Gives a summary of the first annual report of the International Committee on glaciers as to the state of glaciers in various parts of the world.

496 —— [Review of "The glaciers of North America," by Israel C. Russell.]

Science, new ser., vol. v, pp. 660–661, 1897.

497 **Reid** (Harry Fielding). Glacier Bay and its glaciers.
Jour. of Geol., vol. v, pp. 203-206, 1897.
Review by I. C. Russell.

498 **Rickard** (T. A.). Vein walls.
Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. 193-241, 33 figs., 1897; Colliery Eng., vol. xvii, pp. 527-530, vol. xviii, pp. 7-10, 32 figs.; Can. Mg. Review, vol. xvi, pp. 213-217, 229-234, 33 figs.; Eng. and Mg. Jour., vol. lxiii, pp. 282-284, figs. 1-9, pp. 307-309, figs. 12-26, 1897.
Describes and illustrates the phenomena of vein walls in different mines and discusses the formation of ore bodies.

499 —— Enterprise mine, Rico, Colo.
Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. 906-980, 48 figs., 1897.
Describes the geology of the vicinity and the occurrence, character, and structure of the ore bodies. Discusses their origin.

500 —— The Lake of the Woods gold field [Ontario].
Eng. and Mg. Jour., vol. lxiv, pp. 5-8, figs. 1-3, 1897.
Describes the occurrence of gold in northwestern Ontario.

501 **Ries** (Heinrich). The clay-working industry in 1896.
U. S. Geol. Surv., 18th Ann. Rept., Pt. V (cont.), pp. 1105-1168, 1897.
Describes deposits of clay in various parts of the United States.

502 —— The fuller's earth of South Dakota.
Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 333-335, 1898.
Describes its occurrence in the Black Hills.

503 —— The clays and clay working industry of Colorado.
Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 336-340, 1898.
Describes the occurrence, character, and chemical composition of clay deposits in parts of Colorado.

504 **Rowley** (R. R.) and **Keyes** (C. R.). Vertical range of fossils at Louisiana [Missouri].
See Keyes (C. R.) and Rowley (R. R.), No. 331.

505 **Ruedemann** (R.). Evidence of current action in the Ordovician of New York.
Am. Geol., vol. xix, pp. 367-391, pls. xxii, 1897.
Describes the evidence of the parallel arrangement in the rocks of the remains of certain fossils, as bearing on the probable course of the currents by which they were transported. Presents a geologic map of the region described.

506 —— Development and mode of growth of Diplograptus McCoy.
Am. Geol., vol. xx, p. 136 (½ p.), 1897.
Review by N. H. W[inchell].

507 —— [Review of "A handbook of the genera of the North American Paleozoic Bryozoa," by George B. Simpson.]
Am. Geol., vol. xx, pp. 330-331, 1897.

508 **Russell** (Israel Cook). Glaciers of Mount Rainier. With a paper on the rocks of Mount Rainier by George Otis Smith.

U. S. Geol. Surv., 18th Ann. Rept., Pt. II, pp. 355–423, pls. lxv–lxxxii, 1898.

Describes the physical features of the state of Washington and the glaciers and glacial phenomena of the region.

509 —— A reconnoisance in southeastern Washington.

U. S. Geol. Surv., Water Supply and Irrigation Papers No. 4, 96 pp., pls. i–vii, figs. 1–3, 1897.

Describes the physiography of the region, the occurrence and character of the metamorphic rocks, the Kittitas system, the Columbia lava, the John Day system, and the artesian waters conditions.

510 —— Principal features of the geology of southeastern Washington.

Mining, vol. iii, pp. 163–165, 1897.

Describes the general geologic features of the region.

511 —— "Plasticity" of glacial ice.

Am. Jour. Sci., 4th ser., vol. iii, pp. 344–346, 1897.

Discusses the relation of plasticity to the flow of glacier ice.

512 —— [Review of "Glacier Bay and its glaciers," by H. F. Reid.]

513 —— Glaciers of North America; a reading lesson for students of geography and geology. Boston and London, Ginn & Co., 1897.

Jour. of Geol., vol. v, pp. 302–303, 1897, review by T. C. C[hamberlin]; Nat. Geog. Mag., vol. viii, pp. 124–125, 1897, review by W. J. M[cGee]; Science, new ser., vol. v, pp. 660–661, 1897, review by H. F. Reid; Am. Geol., vol. xix, p. 278 (½ p.), 1897, review by N. H. W[inchell].

514 —— Volcanoes of North America, a reading lesson for students of geography and geology.

The Macmillan Company, New York, 1897.

Review, Nature, vol. lvii, pp. 70–71, 1897.

515 —— Lakes of North America, a reading lesson for students of geography and geology.

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516 **Sadtler** (Samuel P.). The genesis and chemical relations of petroleum and natural gas.

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517 —— [On the origin of Pennsylvania petroleum.]

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519 —— [Review of "An introduction to geology," by W. B. Scott.]

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520 —— [Review of "Maryland Geological Survey," Vol. I.]

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521 —— and **Atwood** (Wallace Walter). Drift phenomena in the vicinity of Devils Lake and Baraboo, Wisconsin.

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522 —— and **Knapp** (George N.). Surface geology. Report of progress [New Jersey].

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523 **Sanchez** (P. C.). Sistema de fracturas [Sierra de Pachuca, Mexico].

Inst. geol. de Mexico, Bulls. Nos. 7-9, pp. 81-98, 1897.

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524 **Sardeson** (Frederic W.). The Galena and Maquoketa series. Part II.

Am. Geol., vol. xix, pp. 21-35, 1897.

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525 —— The Galena and Maquoketa series. Part III.

Am. Geol., vol. xix, pp. 91-111, pls. iv-v, 1897.

Describes a number of species of Orthis, including some new ones, and discusses their relations.

526 —— The Galena and Maquoketa series. Part IV.

Am. Geol., vol. xix, pp. 180-190, 1897.

Gives a list of the species of Plectambonites and Rhynchonella occurring in these beds and a summary of facts presented in this and former papers on the same subject.

527 —— Nomenclature of the Galena and Maquoketa series.

Am. Geol., vol. xix, pp. 330-336, 1897.

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528 —— On Streptelasma profundum (Owen), S. corniculum Hall.

Am. Geol., vol. xx, pp. 277-292, pls. xvi-xvii, 1897.

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Am. Geol., vol. xx, pp. 392–403, 1897.
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Zeit. für prak. Geol., Heft 1, pp. 29–30, 1897.
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531 —— Die Goldeszange von Cripple Creek in Colorado.
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532 —— Der Smuggler Erzgang zu Telluride in Colorado.
Zeit. für prak. Geol., Heft 3, pp. 99–100, 1897.
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533 —— Die Gunnison goldzone in Colorado.
Zeit. für prak. Geol., Heft 3, pp. 100–101, 1897.
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534 —— Palaozoische phosphorite in Arkansas.
Zeit. für prak. Geol., Heft 3, pp. 101–102, 1897.
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535 —— Ueber das alter der Goldseifen der Sierra Nevada in Californien.
Zeit. für prak. Geol., Heft 6, pp. 226–227, 1897.
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536 —— Die Magnetit-Lagerstatten bei Port Henry im Staat New York.
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Am Jour. Sci., 4th ser., vol. iii, pp. 455–460, 1897.
Describes fault phenomena in Devonian rocks of central New York.

539 **Schuchert** (Charles). A synopsis of American fossil Brachiopoda, including bibliography and synonymy.
U. S. Geol. Surv., Bull. No. 87, 464 pp., pl. i, figs. 1–6, 1897.
Review by C. E. B[eecher], Am. Nat., vol. xxxi, pp. 1053–1055, 1897.
Describes in tabular form the geographic and geologic distribution of brachiopod genera, discusses the biologic development and the classification of the Brachiopoda, and gives an alphabetic list of genera and species with references and synonymy. Includes a chapter on the morphology of the brachia by Charles E. Beecher.

540 **Schuchert** (Charles). On the fossil phyllopod genera Dipeltis and Protocaris of the family Apodidæ.
U. S. Nat. Mus., Proc., vol. xix, pp. 671–676, pl. lviii. 1897.

541 **Schultze** (E. A.) and **Kain** (C. Henry). The Santa Monica diatomaceous deposit, with list of references to figures of species.
Torrey Bot. Club, Bull., vol. xxiv, pp. 496–504, 1897.
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542 **Scofield** (W. H.), **Ulrich** (E. O.) and. The Lower Silurian Gastropoda of Minnesota.
See Ulrich (E. O.) and Scofield (W. H.), No. 628.

542*a* **Scott** (Samuel). Map of the Black Hills of South Dakota and Wyoming, with full descriptions of mineral resources, etc.
Custer City, S. D. 40 pp. and geological map, 1897.
Gives brief notes on the geologic formations and igneous rocks and the occurrence of minerals in the Black Hills. Presents a geological map of the region.

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The Macmillan Company, New York, 1897.
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547 **Shaler** (Nathaniel S.). Geology of the Cape Cod district [Massachusetts].
U. S. Geol. Surv., 18th Ann. Rept., Pt. II, pp. 503–593, pls. xcvii–civ, figs. 86–92, 1898.
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548 —— [Water supply of eastern Massachusetts.]
Abstract, Science, new ser., vol. v, p. 703 (½ p.), 1897.
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549 **Shaler** (Nathaniel S.), **Woodworth** (J. B.), and **Marbut** (C. F.). The glacial brick clays of Rhode Island.

Am. Geol., vol. xx, pp. 328–329, 1897.

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550 **Shattuck** (George B.). See **Clark** (W. B.), No. 128.

551 ——— **Clark** (W. B.) and. The geology of the sand hills of New Jersey.

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552 **Shimek** (B.). Additional observations on the surface deposits in Iowa.

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Describes character of drift beds at various localities.

553 **Simonds** (Frederic W.). Professor Ch. Fred. Hartt, M. A. A tribute.

Am. Geol., vol. xix, pp. 69–90, pl. iii, 1897.

Gives an account of the life and work of Prof. Hartt and a bibliographic list of his papers.

554 —— [Review of "Marine fossils from the Coal Measures of Arkansas," by J. P. Smith.]

Science, new ser., vol. v, pp. 850–852, 1897.

555 **Simpson** (George B.). A handbook of the genera of the North American Paleozoic Bryozoa.

Am. Geol., vol. xx, pp. 330–331, 1897.

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556 **Sims** (H. N.). A description of a peculiar split in the mammoth coal seam near Ashland, Pa.

Colliery Eng., vol. xix, pp. 532, 2 figs., 1897.

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557 **Sisley** (L. A.). The porphyry dike mines of Montana.

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558 **Skewes** (Edward). The ore shoots of Cripple Creek [Colorado].

Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. 553–579, 1897.

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559 **Slosson** (Edwin E.). Analysis of Popo Agie, Lander, and Shoshone petroleum [Wyoming].

Wyoming Univ. School of Mines, Petroleum ser., Bull. No. 2, pp. 21–34, 1897.

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560 **Smith** (Eugene A.). Sketch of the life of Michael Tuomey.

Am. Geol., vol. xx, pp. 205-212, pl. i, 1897.

Gives a sketch of his life and a list of his published papers.

561 **Smith** (Frank Clemes). The occurrence and behavior of tellurium in gold ores, more particularly with reference to the Potsdam ores of the Black Hills, South Dakota.

Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. 485-515, figs. 1-11, 1897.

Gives analyses of the ores, a description of the action of tellurium as a mineralizing agent and of the microscopic characters of the associated rocks.

562 —— The Potsdam gold ores of the Black Hills of South Dakota.

Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 404-428, 1898.

Describes the occurrence, character, and origin of the so-called Potsdam siliceous gold and silver ores.

563 **Smith** (George Otis). The rocks of Mount Rainier [Washington].

U. S. Geol. Surv., 18th Ann. Rept., Pt. II, pp. 416-423, 1898.

Describes the relations and characters of the granite and volcanic rocks of the region.

564 —— The geology of the Fox Islands, Maine. A contribution to the study of old volcanics.

Skowhegan, Me., 76 pp., 2 pls., 1896.

Review by F. B[ascom], Am. Geol., vol. xix, pp. 214-219, 1897.

565 **Smith** (James Perrin). Studies for students: Comparative study of paleontology and phylogeny.

Jour. of Geol., vol. v, pp. 507-524, pl. 1, 1897.

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566 —— The development of Glyphioceras and the phylogeny of the Glyphioceratidæ.

Cal. Acad. Sci., Proc., Geology, 3d ser., vol. i, pp. 105-128, 3 pls., 1897.

Discusses the classification of the Goniatites and describes the larval stages of Glyphiociras incisum Hyatt.

567 **Smith** (William Sidney Tangier). A geological sketch of San Clemente Island [California].

U. S. Geol. Surv., 18th Ann. Rept., Pt. II, pp. 465-496, pls. lxxxiv-xcvi, figs. 82-85, 1898.

Describes the topography and the character of the eruptive rocks and Tertiary deposits of the island.

568 —— The geology of the Santa Catalina Island [California].

Cal. Acad. Sci., Proc., Geology, 3d ser., vol. i, pp. 1-71, 3 pls., 1897.

Review by F. L. Ransome, Jour. of Geol., vol. v, pp. 208-210, 1897.

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569 **Smith** (William Sidney Tangier). [Review of "The submerged valleys of the coast of California, U. S. A., and of Lower California, Mexico," by George Davidson.]

Jour. of Geol., vol. v, pp. 533-534, 1897.

570 —— A note on the migration of divides.

Jour. of Geol., vol. v, pp. 809-812, 1897.

Describes the migration of a divide on San Clemente Island, off the coast of California.

571 **Smyth** (C. H., Jr.). Pseudomorphs from northern New York.

Am. Jour. Sci., 4th ser., vol. iv, pp. 309-312, 1897.

Describes pseudomorphs of pyroxene after wallastonite and mica after scapolite and pyroxene.

572 **Smyth** (H. L.). The Republic trough [Michigan].

U. S. Geol. Surv., Mon., vol. xxviii, pp. 525-553, pl. xxxiv, 1897. Review by U. S. Grant, Jour. of Geol., vol. v, pp. 402-404, 1897.

Describes the character and occurrence of the Upper and Lower Marquette series, and the position, relation, and origin of the iron ore deposits.

573 —— Magnetic observations in geological mapping.

Am. Inst. Mg. Engrs., Trans., vol. xxvi, pp. 640-709, 27 figs., 1897.

Describes the magnetic rocks of the Lower Huronian series in the Upper Peninsula of Michigan, and the instruments and methods of work. Gives the results of tracing magnetic rocks by the disturbances produced in the instruments.

574 **Spencer** (J. W.). On the continental elevation of the glacial epoch.

Brit. Assoc. Adv. Sci., Rept. 1897, pp. 661-662, 1898.

Discusses the evidences of such elevation.

575 **Spurr** (Josiah Edward). Geology of the Yukon gold district, Alaska. With an introductory chapter on the history and condition of the district to 1897, by Harold Beach Goodrich.

U. S. Geol. Surv., 18th Ann. Rept., Pt. III, pp. 101-392, pls. xxxii-li, figs. 7-25, 1898.

Describes the occurrence, character, and distribution of the sedimentary and igneous rocks and of the auriferous veins and placer deposits of the region. Discusses the evidences of movement in the earth's crust. Includes a report by F. H. Knowlton on the fossils collected and a chapter on recent warpings of the region by H. B. Goodrich.

576 —— The measurement of faults.

Jour. of Geol., vol. v, pp. 723-729, 1897.

Abstract, Science, new ser., vol. v, p. 238, 1897.

Describes the general methods employed and gives the author's definition of the terms used in the study of fault phenomena.

577 **Squier** (C. H.). Studies in the driftless region of Wisconsin.

Jour. of Geol., vol. v, pp. 825-836, figs. 1-2, 1897.

Describes the occurrence of loess and the characteristics of the stratified and unstratified beds, and discusses the evidences of their glacial origin.

578 **Stanton** (Timothy W.). A comparative study of the Lower Cretaceous formations and faunas of the United States.

Jour. of Geol., vol. v, pp. 579–624, 1897.

Describes the general features and classification of the Lower Cretaceous strata and the lithologic and faunal characters of its subdivisions. Presents a bibliography of the subject.

579 —— On the genus Remondia Gabb, a group of Cretaceous bivalve mollusks.

U. S. Nat. Mus., Proc., vol. xix, pp. 299–301, pl. xxvi, 1897.

580 —— and **Knowlton** (F. H.). Stratigraphy and paleontology of the Laramie and related formations in Wyoming.

Geol. Soc. Am., Bull., vol. viii, pp. 127-156; Review by A. Hollick, Torrey Bot. Club., Bull., vol. xxiv, p. 26 (½ p.), 1897.

Describes the stratigraphic and paleontologic features of the various beds.

581 **Stearns** (Robert E.). Description of a new species of Actæon from the Quaternary bluffs of Spanish Bight, San Diego, California.

The Nautilus, vol. xi, pp. 14–15, 1897.

Describes Actæon traskii n. sp.

582 **Stewart** (Alban). Restoration of Oreodon culbertsoni Leidy.

Kans. Univ. Quart., vol. vi, pp. 13–14, pl. i, 1897.

583 **Stone** (George H.). To trace an invisible dike.

Colliery Eng., vol. xviii, p. 151, 1897.

Describes dike phenomena at Cripple Creek, Colo.

584 **Storms** (W. H.). Mines of the gold belt [California].

Mg. and Sci. Press., vol. lxxv, pp. 96, 194–195, 1897.

Describes the general geologic features and occurrence of gold.

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585 **Tarr** (Ralph S.). Former extension of Cornell glacier near the southern end of Melville Bay.

Geol. Soc. Am., Bull., vol. viii, pp. 251-268, pls. 25–29, 1897.

Describes the glacial phenomena of the region.

586 —— Arctic sea ice as a geological agent.

Am. Jour. Sci., 4th ser., vol. iii, pp. 223-229, 1897.

Describes the erosion and transportation effected by sea and glacier ice.

587 —— Difference in the climate of the Greenland and American sides of Davis' and Baffin's Bay.

Am. Jour. Sci., 4th ser., vol. iii, pp. 315-321, 1897.

Discusses the changes of level that have taken place, and their relation to glaciation.

588 **Tarr** (Ralph S.). Former extension of Cornell glacier near the southern end of Melville Bay.

Jour. of Geol., vol. v, pp. 303–307, pl. 1, figs. 1–2, 1897.
Review by T. C. Chamberlin.

589 —— Rapidity of weathering and stream erosion in the Arctic latitudes.

Am. Geol., vol. xix, pp. 131–136, pl. vi, 1897.
Describes the characteristics of weathering and stream erosion in this region.

590 —— Evidence of glaciation in Labrador and Baffin Land.

Am. Geol., vol. xix, pp. 191–197, pl. x, 1897.
Describes the glacial phenomena of the region.

591 —— Valley glaciers of the upper Nugsuck peninsula, Greenland.

Am. Geol., vol. xix, pp. 262–267, pl. xv, 1897.
Describes the occurrence of local glaciers on this coast of Greenland.

592 —— Changes of level in the Bermuda Islands.

Am. Geol., vol. xix, pp. 293–303, pls. xvi–xviii, 1897.
Describes the physiographic and orographic features of the islands.

593 —— The margin of the Cornell glacier [Greenland].

Am. Geol., vol. xx, pp. 139–156, pls. vi–xii, 1897.
Describes and illustrates the characteristics of this glacier.

594 —— Former extension of Greenland glaciers.

Science, new ser., vol. v, p. 344, 1897.
Discusses the evidence as to the extension of glaciation over the angular peaks.

595 —— The former extension of ice in Greenland.

Science, new ser., vol. v, pp. 515–516, 1897.
Discusses certain observations on this subject.

596 —— Former extension of ice in Greenland.

Science, new ser., vol. v, pp. 804–805, 1897.
Discusses Professor Chamberlin's review of the author's paper on this subject.

597 —— The glaciers of Greenland.

Sci. Amer., vol. lxxvi, pp. 216–217, figs. 1–3, 1897.
Describes some of the glaciers of Greenland.

598 —— The Arctic sea ice as a geological agent.

Sci. Am. Suppl., vol. xliv, pp. 17941–17942, 1897.

599 —— Elementary geology.

Review by H. B. Kümmel, Jour. of Geol., vol. v, pp. 317–318, 1897; Review by W J McGee, Nat. Geog. Mag., vol. viii, pp. 59–60, 1897; Review by N. H. Winchell, Am. Geol., vol. xix, pp. 277–278, 1897.

600 **Taylor** (Frank Bursley). Correlation of Erie-Huron beaches with outlets and moraines in southeastern Michigan.

Geol. Soc. Am., Bull., vol. viii, pp. 31–58, pl. 2, 1897; Review by C. H. Gordon. Jour. of Geol., vol. v, pp. 313–317, 1897.

Describes the recent work of the author on the moraines and beaches of the region.

601 —— Moraines of recession and their significance in glacial theory

Jour. of Geol., vol. v, pp. 421–466, 1897; Am. Geol., vol. xix, correspondence, p. 290, 1897.

Describes the Cincinnati-Mackinac moraine series, and discusses its value as a basis of interpretation. Discusses the character and duration of the glacial oscillations and the effect of changes of climate on the ice sheet.

602 —— Scoured bowlders of the Matawa valley [Ontario].

Am. Jour. Sci., 4th ser., vol. iii, pp. 208–218, 1897.

Describes the characteristics and occurrence of scoured bowlders which indicate the probable course of the former outlet of the Great Lakes.

603 —— Lake Adirondack.

Am. Geol., vol. xix, pp. 392–396, 1897.

Describes the general features of a probable glacial lake in northern New York.

604 —— The Nipissing-Matawa river the outlet of the Nipissing great lakes.

Am. Geol., vol. xx, correspondence, pp. 65–66, 1897.

Describes the general features of the river.

605 —— Notes on the abandoned beaches of the north coast of Lake Superior.

Am. Geol., vol. xx, pp. 111–128, 1897.

Reviews Prof. Lawson's publications on the subject and describes the author's observations on the abandoned beaches.

606 —— The Champlain submergence and uplift, and their relation to the Great Lakes and Niagara Falls.

Brit. Assoc. Adv. Sci., Rept. 1897, pp. 652–653, 1898.

Discusses the evidence of the abandoned beaches.

607 **Teall** (J. J. H.). Differentiation in igneous magmas as a result of progressive crystallization.

Brit. Assoc. Adv. Sci., Rept. 1897, pp. 661–662, 1898.

Describes certain basalts and their bearing on the theory of differentiation of igneous magmas.

608 **Tight** (W. G.). Some pre-Glacial drainage features in southern Ohio.

Denison Univ., Sci. Lab., Bull., vol. ix, pt. ii, pp. 22–32, pls. A, B, C, III, 1897.

Describes drainage features in southern Ohio.

609 **Tight** (W. G.). A pre-Glacial valley in Fairfield County [Ohio].
Denison Univ., Sci. Lab., Bull., vol. ix, pt. ii, pp. 33–37, pls. D, E, F, IV, 1897.
Describes the drainage of the region.

610 **Tilton** (J. L.). Results of recent geological work in Madison County [Iowa].
Iowa Acad. Sci., Proc., vol. iv, pp. 47–54, 1897.
Describes the character and distribution of the loess, drift, and Upper Carboniferous beds.

611 **Todd** (J. E.). Is the loess of either lacustrine or semi-marine origin?
Reviews various theories regarding the origin of the loess.

612 —— Volcanic dust in southwestern Nebraska and in South Dakota.
Science, new ser., vol. v, pp. 61–62, 1897.
Notes occurrence in the region.

613 —— The Quaternary of Missouri.
Science, new ser., vol. v, pp. 695–696 (½ p.), 1897.
Discusses certain features of the loess deposits.

614 —— [Review of "Preliminary report on artesian waters of a portion of the Dakotas," by N. H. Darton.]
Am. Geol., vol. xix, pp. 274–276, 1897.

615 —— The moraines of the Missouri couteau and their attendant deposits.
Am. Geol., vol. xx, p. 329 (½ p.), 1897.
Review by W. U[pham].

616 **Tolman** (Cyrus Fischer, jr.). [Review of "Some queries on rock differentiation," by G. F. Becker.]
Jour. of Geol., vol. v, pp. 393–398, 1897.

617 —— [Review of "Some mines of Rosita and Silver Cliff, Colorado," by S. F. Emmons.]
Jour. of Geol., vol. v, pp. 856–857, 1897.

617*a* **Tower** (George Warren, jr.), **Emmons** (S. F.) and. Economic geology of the Butte special district [Montana].
See Emmons (S. F.) and Tower (G W., jr.), No. 202.

618 **Turner** (Henry W.). Downieville folio, California.
U. S. Geol. Surv., Geol. Atlas of the U. S., Folio No. 37, 1897.
Describes the geologic history of the gold belt of California, the occurrence and character of the auriferous slate series, the superjacent series, the igneous rocks, the structural features of the region, and the occurrence of gold. Includes topographic and geologic maps.

619 —— Nomenclature of metamorphic lavas.
Science, new ser., vol. v, p. 226, 1897.
Discusses the nomenclature of these rocks.

620 **Turner** (Henry W.). A new amphibole-pyroxene rock and some orbicular rocks from California.

Abstract, Science, new ser., vol. v, p. 811 (½ p.), 1897.

621 —— and **Ransome** (F. L.). Sonora folio, California.

U. S. Geol. Surv., Geol. Atlas of the U. S., Folio No. 41, 1897.

Describes the geology of the gold belt, the topography of the region, the character and distribution of the sedimentary and igneous rocks, and the occurrence of gold. Includes topographic and geologic maps.

622 **Tyrrell** (J. B.). The glaciation of north-central Canada.

Brit. Assoc. Adv., Rept. 1897, pp. 662–663, 1898.

Describes the glacial history of the region.

623 —— Genesis of Lake Agassiz.

Jour. of Geol., vol. v, pp. 78–81, 1897.

Review by G. M. D[awson].

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624 **Udden** (J. A.). A brief description of the section of Devonian rocks exposed in the vicinity of Rock Island, Ill., with a statement of the nature of its fish remains.

Cin. Soc. Hist., Jour., vol. xix, pp. 93–95, 1897.

Gives a summary description of the several beds and discusses their correlation with other Devonian strata in the Mississippi Valley.

625 —— Origin of the loess.

Am. Geol., vol. xx, correspondence, pp. 274–275, 1897.

Makes corrections of a report of a recent paper by the author on this subject.

626 **Ulrich** (E. O.). The Lower Silurian Lamellibranchiata of Minnesota.

Minn. Geol. and Nat. Hist. Surv., Paleontology, vol. iii, pt. ii, pp. 475–628, pls. xxxv–xlvi, 1897.

Gives the author's terminology, methods of study, and classification. Describes many new species.

627 —— The lower Silurian Ostracoda of Minnesota.

Minn. Geol. and Nat. Hist. Surv., Paleontology, vol. iii, pt. ii, pp. 629–693, pls. xliii–xliv, figs. 46–52, 1897.

Gives a provisional classification of the Paleozoic Ostracoda, and describes many new species.

628 —— and **Scofield** (W. H.). The Lower Silurian Gastropoda of Minnesota.

Minn. Geol. and Nat. Hist. Surv., Paleontology, vol. iii, pt. ii, pp. 813–1081, pls. lxi–lxxii, figs. 1–12, 1897.

Discusses the general characters and classification of the gastropods and describes many new species.

629 **Ulrich** (E. O.), **Winchell** (N. H.) and. The Lower Silurian deposits of the Upper Mississippi province: A correlation of the strata with those in the Cincinnati, Tennessee, New York, and Canadian provinces, and the stratigraphic and geographic distribution of the fossils.

See Winchell (N. H.) and Ulrich (E. O.), No. 730.

630 **Underhill** (James). Vein intersections in Clear Creek County, Colorado.

Eng. and Mg. Jour., vol. lxiv, p. 339, figs. 1–5, 1897.

Describes the vein phenomena.

631 —— The Seaton mine, Colorado.

Eng. and Mg. Jour., vol. lxiv, p. 550, figs. 1–4, 1897.

Describes the vein system.

632 **Upham** (Warren). Cuyahoga pre-Glacial gorge in Cleveland, Ohio.

Geol. Soc. Am., Bull., vol. viii, pp. 7–13, 1897.

Gives the records of wells and discusses their bearing on the evidence of the pre-Glacial erosion of the region.

633 —— Modified drift in Saint Paul, Minnesota.

Geol. Soc. Am., Bull., vol. viii, pp. 183–196, pl. lv, 1897.

Describes the glacial phenomena of the vicinity.

634 —— [Review of "Sixteenth Annual Report of the United States Geological Survey."]

Am. Geol., vol. xix, pp. 210–214, 1897.

635 —— Relation of the Lafayette or Ozarkian uplift of North America to Glaciation.

Am. Geol., vol. xix, pp. 339–343, 1897.

Discusses the relation of these uplifts to the glaciation of North America.

636 —— Rhythmic accumulation of moraines by waning ice-sheets.

Am. Geol., vol. xix, pp. 411–417, 1897.

Discusses the character and mode of formation of moraines.

637 —— [Review of "Summary report of the Geological Survey department of Canada for the year 1896," by G. M. Dawson.]

Am. Geol., vol. xix, pp. 417–418, 1897.

638 —— [Review of "The water resources of Illinois," by Frank Leverett.]

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639 —— [Review of "Iowa Geological Survey, vol. vi: Report on lead, zinc, artesian wells, etc."]

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640 **Upham** (Warren). [Review of "Geology of Johnson County, Iowa," by Samuel Calvin.]
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641 —— The Glacial Lake Agassiz.
Review by F. L[everett], Am. Geol., vol. xx, pp. 324–328, 1897; Review by T. C. C[hamberlin], Jour. of Geol., vol. v, pp. 851–853, 1897.

642 —— [Review of "The Glacial brick clays of Rhode Island and southern Massachusetts," by N. S. Shaler, J. B. Woodworth, and G. F. Marbut.]
Am. Geol., vol. xx, pp. 328–329, 1897.

643 —— [Review of "The moraines of the Missouri couteau and their attendant deposits," by J. E. Todd.]
Am. Geol., vol. xx, p. 329, 1897.

644 —— [Review of "Glacial observations in the Umanak district, Greenland," by George H. Barton.]
Am. Geol., vol. xx, pp. 329–330, 1897.

645 —— Drumlins containing or lying on modified drifts.
Am. Geol., vol. xx, pp. 383–387, 1897.
Discusses the origin of these drumlins.

V.

646 **Van Hise** (Charles R.). Studies for students: Deformation of rocks V.
Jour. of Geol., vol. v, pp. 178–193, figs. 1–6, 1897.
Describes the deformation of rocks by folding and the relations of cleavage, jointing, and bedding.

647 —— Geology for quarrymen.
Stone, vol. xiv, pp. 134–142, 260–264, 349–355, 487–490, 586–589; vol. xv, pp. 42–46, 126–132, 274–279, 370–373, 1897.
Extract from the 16th Annual Report of the U. S. Geological Survey.

648 —— and **Bayley** (William Shirley). The Marquette iron-bearing district of Michigan. With atlas. Including a chapter on the Republic Trough by Henry Lloyd Smyth.
U. S. Geol. Surv., Mon., vol. xxviii, 608 pp., pls. i–xxv, figs. 1–27, atlas sheets i–xxxix, 1897. Review by U. S. Grant, Jour. Geol., vol. v, pp. 402–404, 1897.
Reviews the previous explorations and literature on the region; describes the occurrence and character of the subdivisions of the Basement complex, and the Upper and Lower Marquette series, the igneous rocks, and the geologic features and structures of the Republic trough. Includes a discussion of the general geology of the region.

649 **Vaughan** (T. Wayland). Additional notes on the outlying areas of the Comanche series in Oklahoma and Kansas.
Am. Jour. Sci., 4th ser., vol. iv., pp. 43–50, with map, 1897.
Describes sections in various parts of the region, giving lists of fossils collected, and discusses their bearing on the relation and age of parts of the Comanche series.

650 **Vaughan** (T. Wayland). The asphalt deposits of western Texas.
U. S. Geol. Surv., 18th Ann. Rept., Pt. V (cont.), pp. 930–935, 18·7.
Describes its occurrence in the Cretaceous beds of the region.

651 —— Geologic notes on Kansas, Oklahoma, and Indian Territory.
Abstract, Science, new ser., vol. v, pp. 558–559, 1897.

652 —— **Hill** (R. T.) and. Geology of the Edwards plateau and Rio Grande plain adjacent to Austin and San Antonio, Texas, with reference to the occurrence of underground waters.
See Hill (R. T.) and Vaughan (T. W.), No. 287.

653 **Vogdes** (Anthony W.). Notes on Paleozoic crustacea, No. 5, Carboniferous trilobites from Missouri.
Cal. Acad. Sci., Proc., vol. vi, pp. 197–198, 1897.
Describes Proetus placidus n. sp., from the Chouteau limestone of Missouri.

W.

654 **Wadsworth** (M. E.). The origin and mode of occurrence of the Lake Superior copper deposits.
Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 669–696.
Discusses the phenomena of the alteration of rock masses, the formation of ore deposits, and the character and relations of the Keweenawan and Potsdam series, and the lava flows.

655 **Walcott** (Charles Doolittle). The post-Pliocene elevation of the Inyo range, and the lake beds of Waucobi embayment, Inyo County, California.
Jour. of Geol., vol. v, pp. 340–348, figs. 1–5, 1897.
Presents evidence as to the occurrence of recent orographic movement in the region and describes the character and occurrence of the lake beds.

656 —— Note on the genus Lingulepis.
Am. Jour. Sci., 4th ser., vol. iii, pp. 404–405, 1897.
Describes Lingulepis meeki n. sp. from the Middle Cambrian.

657 —— Cambrian Brachiopoda: Genera Iphidia and Yorkia, with descriptions of each and of the genus Acrothele.
U. S. Nat. Mus., Proc. vol. xix, pp. 707–718, pls. lix–lx, 1897.

658 —— Report of the Director U. S. Geological Survey for the fiscal year ending June 30, 1897.
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Describes the work of the geologic, topographic, and paleontologic divisions of the United States Geological Survey and gives summaries of the results obtained by the various field parties.

659 **Walker** (T. L.). Geological and petrographical studies of the Sudbury nickel district [Canada].
London Geol. Soc., Quart. Jour., vol. liii, pp. 40–66, 1897; review by G. Maas, Zeit. fur prak. Geol., Heft. 8, pp. 297–300, fig. 85, 1897.
Describes the petrographic characters of the nickel-bearing and associated rocks and discusses the origin of the ore.

660 **Ward** (Lester F.). Professor Fontaine and Dr. Newberry on the age of the Potomac formation.

Science, new ser., vol. v, pp. 411-423, 1897.

Reviews certain papers and discusses the conclusions as to the evidences of the age of the Potomac formation.

661 —— A new species of Eucalyptus from the Dakota group of southwestern Kansas.

Torrey Bot. Club, Bull., vol. xxiv, pp. 576-577, 2 figs., 1897.

Describes Eucalyptus gouldii n. sp.

662 —— The Cretaceous formation in southwestern Kansas.

Abstract, Science, new ser., vol. vi, pp. 814-815, 1897.

663 **Waring** (W. George). The gold fields of Altar, Mexico.

Eng. and Mg. Jour., vol. lxiii, pp. 257-258, 1897.

Describes the occurrence of gold in western Mexico.

664 **Warren** (E. R.). Vein walls.

Eng. and Mg. Jour., vol. lxiii, p. 424, 1897.

Describes vein structure near Crested Butte, Colorado.

665 —— Some mineral veins of Gunnison County, Colorado.

Eng. and Mg. Jour., vol. lxiii, pp. 597-598, 1897.

Discusses occurrence of silver-lead ore bodies near Crested Butte, Colo.

666 **Watson** (Thomas L.). Evidences of recent elevation of the southern coast of Baffinland.

Jour. of Geol., vol. v, pp. 17-33, 1897.

Describes the topographic features of the region, and the occurrence of raised beaches and their contained fossils. Discusses their occurrence as evidence of recent elevation. Gives a partial bibliography of the subject.

667 —— [Review of "The relation of the fauna of the Ithaca group to the faunas of the Portage and Chemung," by Edward M. Kindle].

Am. Geol., vol. xix, pp. 140-141, 1897.

668 —— Lakes with more than one outlet.

Am. Geol., vol. xix, pp. 267-270, 1897.

Reviews the literature describing such phenomena and describes occurrences in Baffinland.

669 —— A bibliography of the geological, mineralogical, and paleontological literature of the State of Virginia.

Am Pal., Bull., vol. 2, No. 7, p. 109, 1897.

Gives a list of journals consulted, and a bibliography arranged alphabetically by authors' names.

670 **Watts** (W. L.). Oil and gas yielding formations of Los Angeles, Ventura, and Santa Barbara counties [California].

Cal. State Mg. Bureau, Bull. No. 11, p. 94, 35 figs., 1897.

Describes the occurrence of oil and the character and structure of the Tertiary beds. Gives a list of fossils determined. Includes geological sketch maps of the several districts.

671 **Weaver** (W. J.). River adjustment in North Carolina.
Elisha Mitchell Sci. Soc., Jour., 1896, pt. i, pp. 13-24, figs. 1-2, 1896.
Discusses the changes in the drainage lines of North Carolina.

671*a* **Weed** (Walter Harvey). [Areal Geology, Butte quadrangle, Montana.]
U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 38, 1897.
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672 —— Laccoliths in folded strata.
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673 —— and **Pirsson** (L. V.). Geology of Castle Mountain mining district, Montana.
Review, Jour. of Geol., vol. v, pp. 210-212, 1897.

674 —— Geology and mineral resources of the Judith Mountains of Montana.
U. S. Geol. Surv., 18th Ann. Rept., Pt. III, pp. 446-616, pls. lxix-lxxxvi, figs. 32-54b, 1898.
Describes the physiography, geologic history, occurrence and character of the Paleozoic and Mesozoic rocks, the detailed geology, the character and occurrence of the igneous rocks, the dynamic and structural geology, and the mineral resources of the region.

675 **Weeks** (Fred Boughton). Bibliography and index of North American geology, paleontology, petrology, and mineralogy for 1896.
U. S. Geol. Surv., Bull. No. 149, 152 pp., 1897.
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676 **Weller** (Stuart). [Review of "Report on the Valley Regions of Alabama (Paleozoic strata) Part I. On the Tennessee Valley region" by Henry McCalley.]
Jour. of Geol., vol. v, pp. 307-308, 1897.

677 —— [Review of "Final report on the geology of Minnesota, Paleontology, vol. iii, pt. ii."]
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678 —— [Review of "Bulletins of American Paleontology, vol. i."]
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679 —— Correlation of the Devonian faunas in southern Illinois.
Jour. of Geol., vol. v, pp. 625-635, 1897.
Gives a list of fossils collected in Illinois on the Mississippi River, and discusses the relations of the Illinois, Iowa, and New York Devonian faunas.

680 —— On the presence of problematic fossil Medusæ in the Niagara limestone of northern Illinois.
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681 **Weller** (Stuart). Cryptodiscus Hall.

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682 **Wells** (J. Walter). The mispickel gold ores of Deloro, Ontario.

Can. Mg. Rev., vol. xvi, pp. 120–121, 1897.

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683 **Wheeler** (H. A.). Clay deposits.

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684 **White** (David). Age of the lower coals of Henry County, Missouri.

Geol. Soc. Am., Bull., vol. viii, pp. 287–304, 1897. Review by A. H[ollick], Torrey Bot. Club., Bull., vol. xxiv, pp. 316–317, 1897.

Describes the stratigraphy of the coal beds, the composition and distribution of the flora, and its bearing on the age of the beds. Includes a discussion of the early Carboniferous flora.

685 —— [Review of "Zur palaozoischen Flora der Arktischen zone," by A. G. Nathorst, Stockholm, 1894.]

Am. Nat., vol. xxxi, pp. 43–45, 1897.

686 **White** (Theodore G.). A contribution to the petrography of the Boston Basin [Massachusetts].

Boston Soc. Nat. Hist., Proc., vol. xxv, pp. 117–156, 5 pls., 1897.

Describes the character and occurrence of the Cambrian slates, the petrographic characters of the granitoid, porphyritic, and felsitic rocks, and the occurrence of granite dikes and contact phenomena.

687 **Whiteaves** (J. F.). The fossils of the Galena-Trenton and Black River formations of Lake Winnipeg and its vicinity [Canada].

Canada Geol. Surv., Paleozoic Fossils, vol. iii, pt. iii, pp. 129–242, pls. 16–22, figs. 19, 1897. Review by J. M. Clarke, Am. Geol., vol. xx, pp. 187–188, 1897.

Describes the characters of the fossils collected, including a number of new species.

688 —— Note on a fish tooth from the Upper Arisaig series of Nova Scotia.

Brit. Assoc. Adv. Sci., Rept. 1897, pp. 656–657, 1898.

Discusses its bearing on the age of the beds.

689 —— Description of a new genus and species of cystideans from the Trenton limestone at Ottawa [Ontario].

Can. Rec. Sci., vol. vii, pp. 287–292, 3 figs., 1897.

Describes Astrocystites ottawaensis n. sp.

690 **Whitfield** (Robert P.). Note on the hypostome of Lichas (Teratapsis) grandis Hall.

Am. Mus. Nat. Hist., Bull., vol. ix, pp. 45–46, 3 figs., 1897.

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691 **Whitfield** (Robert P.). Description of new species of Silurian fossils from near Fort Cassin and elsewhere on Lake Champlain.

Am. Mus. Nat. Hist., Bull., vol. ix, pp. 177–184, pls. iv–v, 1897.

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692 —— Descriptions of species of Rudistæ from the Cretaceous rocks of Jamaica, W. I., collected and presented by Mr. F. C. Nicholas.

Am. Mus. Nat. Hist., Bull., vol. ix, pp. 185–196, pls. vi–xxii, 1897

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693 —— Observations on the genus Barrettia Woodward, with descriptions of two new species.

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694 **Whitten** (W. M.), **Bailey** (E. H. S.) and. On the chemical composition of some Kansas gypsum rocks.

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695 **Wieland** (George R.). Eopaleozoic hot springs and the origin of the Pennsylvania siliceous oolite.

Am. Jour. Sci., 4th ser., vol. iv, pp. 262–264, fig. 1, 1897.

Discusses the origin of certain material.

696 **Williams** (E. H., jr.). Greenland glaciers.

Science, new ser., vol. v, p. 448, 1897.

Compares certain features of glaciation in Greenland and Pennsylvania.

697 **Williams** (Henry S.). On the southern Devonian formations.

Am. Jour. Sci., 4th ser., vol. iii, pp. 393–403, with map, 1897. Review by E. W. C[laypole], Am. Geol., vol. xx, pp. 133–134, 1897.

Describes the characteristics of the Devonian strata and discusses the author's hypothesis to explain the differences in the Devonian stratigraphy of eastern United States.

698 —— [Review of "An introduction to geology," by W. B. Scott.]

Am. Jour. Sci., 4th ser., vol. iii, pp. 422–423, 1897; Science, new ser., vol. v, pp. 659–660, 1897.

699 **Willis** (Bailey). Some coal fields of Puget Sound [Washington].

U. S. Geol. Surv., 18th Ann. Rept., Pt. III, pp. 399–436, pls. lii–lxviii, figs. 26–31, 1898.

Describes the physiography, stratigraphic succession, and structure of the region. Discusses the age of the beds and gives an account of the occurrence of coal.

700 —— Glaciation in the Puget Sound region [Washington].

Am. Geol., vol. xix, pp. 144–145, 1897; Abstract, Science, new ser., vol. v, pp. 238–239, 1897.

Gives brief notes on the glacial phenomena of the region.

701 **Willis** (Bailey). [Review of "Elementary geology," by Ralph S. Tarr.]
Science, new ser., vol. vi, pp. 599-600, 1897.

702 —— Drift phenomena of Puget Sound and their interpretation.
Brit. Assoc. Adv. Sci., Rept. 1897, p. 653 (½ p.), 1898.

703 **Williston** (S. W.). The Kansas Niobrara Cretaceous.
Kan. Univ. Geol. Surv., vol. ii, pp. 237-246, pl. xxxv, 1897.
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704 —— The Pleistocene of Kansas.
Kan. Univ. Geol. Surv., vol. ii, pp. 299-308, figs. 12-13, 1897.
Gives notes on the occurrence of vertebrates in the Pleistocene of Kansas, and discusses evidences as to the age of the Equus beds and the occurrence of the Goodnight and Blanco beds.

705 —— Restoration of Ornithostoma (Pteranodon).
Kan. Univ. Quart., vol. vi, pp. 35-51, pl. ii, 1897.
Gives the author's classification and describes the characters of Ornithostoma.

706 —— Notice of some vertebrate remains from the Kansas Permian.
Kan. Univ. Quart., vol. vi, pp. 53-56, figs. 1-4, 1897.
Describes fragments of Cricotus.

707 —— A new plesiosaur from the Kansas Comanche Cretaceous.
Kan. Univ. Quart., vol. vi, p. 579, 1897.
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708 —— Brachysaurus, a new genus of Mosasaurs.
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709 —— On the extremities of Tylosaurus.
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Describes restorations of Clidastes, Platecarpus, and Tylosaurus.

711 —— Range and distribution of the Mosasaurs, with remarks on synonymy.
Kan. Univ. Quart., vol. vi, pp. 177-185, pl. xx, 1897.
Describes the geologic and geographic distribution of mosasaurs and discusses their synonymy.

712 —— A new labyrithodont from the Kansas Carboniferous.
Kan. Univ. Quart., vol. vi, pp. 209-210, pl. xxi. 1897.
Describes a tooth of particular interest, as it is from a lower horizon than hitherto recorded and the only one yet found in America.

713 **Williston** (S. W.). Vertebrates from the Kansas Permian.

Science, new ser., vol. v, p. 395 (½ p.), 1897.

Notes on discovery of vertebrate remains from near the base of the Permian.

714 —— [Review of "The University Geological Survey of Kansas, Vol. II," by Erasmus Haworth and assistants.]

Jour. of Geol., vol. v, pp. 400–401, 1897.

715 **Winchell** (Alexander N.). The age of the Great Lakes of North America.

Am. Geol., vol. xix, pp. 336–339, 1897.

Gives a partial bibliography of the subject, with brief notes on the contents of each paper.

716 —— The Koochiching granite.

Am. Geol., vol. xx, pp. 293–299, figs. 1–3, 1897.

Describes the megascopic and microscopic and chemical characters of the granite.

717 **Winchell** (Horace V.). The gold fields of the Rainy River district [Ontario].

Eng. and Mg. Jour., vol. lxiv, pp. 485–486, with geological map, 1897.

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718 **Winchell** (N. H.). [Review of "The ancient volcanic rocks of South Mountain, Pennsylvania," by Florence Bascom.]

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719 —— [Review of "Elementary Geology," by Ralph S. Tarr.]

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720 —— [Review of "Glaciers of North America," by I. C. Russell.]

Am. Geol., vol. xix, p. 278 (½ p.), 1897.

721 —— Some new features in the geology of northeastern Minnesota.

Am. Geol., vol. xx, pp. 41–51, 1897.

Describes recent observations on the transition from crystalline schists to the Laurentian, the relations of the Stuntz conglomerate, and the nature and position of the coarse conglomerate in Puckwunge valley.

722 —— [Review of "Papers and notes on the genesis and matrix of the diamond," by H. C. Lewis.]

Am. Geol., vol. xx, pp. 57–59, 1897.

723 —— Light in the East.

Am. Geol., vol. xx, Editorial comment, pp. 128–129, 1897.

Discusses use of the term Taconic.

724 —— [Review of "The Newark system, Report of progress," by H. B. Kümmell.]

Am. Geol., vol. xx, pp. 134–135, 1897.

725 **Winchell** (N. H.). [Review of "Twenty-First Annual Report of the Department of Geology and Natural Resources, Indiana."]
Am. Geol., vol. xx, pp. 135–136 (½ p.), 1897.

726 —— [Review of development and mode of growth of Diplograptus McCoy," by R. Ruedemann.]
Am. Geol., vol. xx, p. 136 (½ p.), 1897.

727 —— The Fisher meteorite, chemical and mineral composition.
Am. Geol., vol. xx, pp. 316–317, 1897.
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728 —— The Taconic according to Renevier.
Am. Geol., vol. xx, Editorial Comment, pp. 405–407, 1897.
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729 —— Minnesota quartzite.
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730 —— and **Ulrich** (E. O.). The Lower Silurian deposits of the Upper Mississippi: A correlation of the strata with those in the Cincinnati, Tennessee, New York, and Canadian Provinces, and the stratigraphic and geographic distribution of the fossils.
Minn. Geol. and Nat. Hist. Surv., Paleontology, vol. iii, pt. ii, pp. lxxxiii–cxxix, 1897.
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731 **Winslow** (Arthur). [Review of geology and mining industry of the Cripple Creek district, Colorado, by Whitman Cross and R. A. F. Penrose, jr.]
Jour. of Geol., vol. v, pp. 197–203, 1897.

732 **Wolff** (J. E.). Report on Archean geology [New Jersey].
N. J. Geol. Surv., Rept. 1896, pp. 91–94, pl. ix, 1897.
Describes occurrence of elæolite-syenite.

733 —— and **Brooks** (Alfred Hulse). The age of the Franklin White limestone of Sussex County, New Jersey.
U. S. Geol. Surv., 18th Ann. Rept., pp. 431–457, pl. lxxxiii, fig. 77–81, 1898; Abstract, Geol. Soc. Am., Bull., vol. viii, p. 397, 1897.
Gives a review of previous literature, a description of the lithologic character and structure of the formation, and a summary and conclusions.

734 **Woodman** (J. Edmund). [Review of "The elevated reefs of Florida," by Alexander Agassiz. With notes on the geology of southern Florida, by Leon S. Griswold.]
Jour. of Geol., vol. v, pp. 312–313, 1897.

735 **Woodward** (A. Smith). Edward Drinker Cope.
Nat. Science, vol. x, pp. 377–381, pl. iv, 1897.
Gives a sketch of the life of Professor Cope.

736 **Woodworth** (Jay Backus). Unconformities of Marthas Vineyard and of Block Island.

Geol. Soc. Am., Bull., vol. viii, pp. 197-212, pl. 16, 1897.

Describes the character and occurrence of the Tertiary strata and the unconformities of these islands.

737 —— Charles Thomas Jackson.

Am. Geol., vol. xx, pp. 69-110, pl. iv, 1897.

Gives an account of the life and work of Jackson and a list of his published papers.

738 —— [Review of "A treatise on rocks, rock weathering, and soils," by George P. Merrill.]

Science, new ser., vol. v, pp. 995-997, 1897.

739 **Woolman** (Lewis). Artesian and other bored wells, and also dug wells, in southern New Jersey.

N. J. Geol. Surv., Rept. 1896, pp. 97-180, 1897.

Gives well records of the strata penetrated, from various parts of the region.

740 —— Bored wells, mostly in northern New Jersey.

N. J. Geol. Surv., Rept. 1896, pp. 181-200, 1897.

Presents reports on well records of the region.

741 —— Stratigraphy of the Fish House black clay and associated gravels. Fossil horse, Unionidæ, and plant remains.

N. J. Geol. Surv., Rept. 1896, pp. 201-254, pls. x-xviii, 1897.

Reviews the fossil and stratigraphic evidences as to the age of the bed. Includes records of well borings.

742 **Wortman** (J. L.). The Ganodonta and their relationship to the Edentates.

Am. Mus. Nat. Hist., Bull., vol. ix, pp. 59-110, 36 figs., 1897.

Discusses the relationships of the two groups.

ADDENDA TO BIBLIOGRAPHY FOR 1896.

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  - **deleta Sardeson sp.**, Ulrich and Scofield, No. 628.
  - **depressa n. sp.**, Ulrich and Scofield, No. 628.
  - **instabilis Billings var. incurva, n. var.**, Ulrich and Scofield, No. 628.
  - **perovalis Whitfield sp.**, Ulrich and Scofield, No. 628.
  - **powersi n. sp.**, Ulrich and Scofield, No. 628.
  - **richmondensis n. sp.**, Ulrich and Scofield, No. 628.
  - **rotunda n. sp.**, Ulrich and Scofield, No. 628.
  - **rugatina n. sp.**, Ulrich and Scofield, No. 628.
  - **semicarinata n. sp.**, Ulrich and Scofield, No. 628.
  - **simulatrix n. sp.**, Ulrich and Scofield, No. 628.
  - **subrotunda n. sp.**, Ulrich and Scofield. No. 628.
  - **valida Sardeson sp.**, Ulrich and Scofield, No. 628.
- **Arges wesenbergensis var. paulianus n. var.**, Clarke, No. 133.
- **Aristerella n. gen.**, Ulrich, No. 626.
  - **nitidula n. sp.**, Ulrich, No. 626.
- **Asaphus**
  - **gigas DeKay**, Whiteaves, No. 687.
  - **(Isotelus) susæ Whitfield**, Whiteaves, No. 687.
- **Ascoceras costulatum Whiteaves**, Whiteaves, No. 687.
- **Astrocystides ottawaensis n. sp.**, Whiteaves, No. 689.
- **Aulacopella winnipegensis Rauff**, Whiteaves, No. 687.
- **Barrettia Woodward**, Whitfield, No. 693.
  - **multilirata n. sp.**, Whitfield, No. 693.
  - **sparcilirata n. sp.**, Whitfield, No. 693.
- **Bathyurus**
  - **extans Hall (sp.), 1847**, Clarke, No. 133.
  - **perkinsi n. sp.**, Whitfield, No. 691.
  - **schucherti n. sp.**, Clarke, No. 133.
  - **spiniger Hall (sp.), 1847**, Clarke, No. 133.

Paleontology—Continued.

Genera and species described—Continued.

- **Batocrinus**
  - **douglassi n. sp.**, Miller and Gurley, No. 431.
  - **reliquus n. sp.**, Miller and Gurley, No. 431.
  - **reservatus n. sp.**, Miller and Gurley, No. 431.
  - **rotuliformis n. sp.**, Miller and Gurley, No. 431.
  - **rusticellus n. sp.**, Miller and Gurley, No. 431.
  - **(?) rusticus n. sp.**, Miller and Gurley, No. 431.
  - **scitulus n. sp.**, Miller and Gurley, No. 431.
  - **senex n. sp.**, Miller and Gurley, No. 431.
  - **sharonensis n. sp.**, Miller and Gurley, No. 431.
- **Bellerophon Montfort**, Ulrich and Scofield, No. 628.
  - **bilineatus n. sp.**, Ulrich and Scofield, No. 628.
  - **capax n. sp.**, Ulrich and Scofield, No. 628.
  - **clausus n. sp.**, Ulrich and Scofield, No. 628.
  - **mohri Miller**, Ulrich and Scofield, No. 628.
  - **platystoma Meek and Worthen**, Ulrich and Scofield, No. 628.
  - **recurvus n. sp.**, Ulrich and Scofield, No. 628.
  - **similis n. sp.**, Ulrich and Scofield, No. 628.
  - **subangularis n. sp.**, Ulrich and Scofield, No. 628.
  - **subglobulus n. sp.**, Ulrich and Scofield, No. 628.
  - **troosti (d'Orbigny) Safford**, Ulrich and Scofield, No. 628.
    - **var. burginensis n. var.**, Ulrich and Scofield, No. 628.
- **Bellerophontacea**, Ulrich and Scofield, No. 628.
- **Benthonella turbinata n. sp.**, Guppy and Dall, No. 255.
- **Betula**, Knowlton, No. 345.
  - **æqualis? Lx.**, Knowlton, No. 345.
- **Beyrichia McCoy**, Ulrich, No. 627.
  - **initialis n. sp.**, Ulrich, No. 627.
  - **nova scotica**, Dawson, No. 174.
- **Bittium (Styliferina) præformatum n. sp.**, Guppy and Dall, No. 255.
- **Bollia Jones and Holl**, Ulrich, No. 627.
  - **unguloides n. sp.**, Ulrich, No. 627.
  - **subæquata n. sp.**, Ulrich, No. 627.
- **Brachysaurus n. gen.**, Williston, No. 708.
  - **overtoni Williston**, Williston, No. 708.
- **Bronteus lunatus Billings, 1854**, Clarke, No. 133.
- **Bucanella Meek**, Ulrich and Scofield, No. 628.
- **Bucania Hall**, Ulrich and Scofield, No. 628.
  - **champlainensis n. sp**, Whitfield, No. 691.
  - **crassa n. sp.**, Ulrich and Scofield, No. 628.
  - **elliptica n. sp.**, Ulrich and Scofield, No. 628.
  - **emmonsi n. sp.**, Ulrich and Scofield, No. 628.
  - **frankfortensis n. sp.**, Ulrich and Scofield, No. 628.
  - **halli n. sp.**, Ulrich and Scofield, No. 628.
  - **lindsleyi Safford**, Ulrich and Scofield, No. 628.

Paleontology—Continued.
  Genera and species described—Continued.
    Bucania—Continued.
      micronema n. sp., Ulrich and Scofield, No. 628.
      minnesotensis n. sp., Ulrich and Scofield, No. 628.
      nana n. sp., Ulrich and Scofield. No. 628.
        var. subpatula n. var., Ulrich and Scofield, No. 628.
      nashvillensis n. sp., Ulrich and Scofield, No. 628.
      peracuta n. sp., Ulrich and Scofield, No. 628.
      punctifrons Emmons, Ulrich and Scofield, No. 628.
      rugatina n. sp., Ulrich and Scofield, No. 628.
      simulatrix n. sp., Ulrich and Scofield, No. 628.
      singularis n. sp., Ulrich and Scofield, No. 628.
      subangulata n. sp., Ulrich and Scofield, No. 628.
      sublata n. sp., Ulrich and Scofield, No. 628.
    Bucanopsis n. gen., Ulrich and Scofield, No. 628.
      carinifera n. sp., Ulrich and Scofield, No. 628.
    Bullia buccinoides n. sp., Merriam, No. 425.
    Bumastus
      orbicaudatus Billings (sp.), 1859, Clarke, No. 133.
      trentonensis Emmons (sp.), 1842, Clarke, No. 133.
    Buthotrephis pergracilis Dawson, Dawson, No. 175.
    Byssonychia n. gen., Ulrich, No. 626.
      intermedia Meek and Worthen, Ulrich, No. 626.
      tenuistriata n. sp., Ulrich, No. 626.
    Bythocypris Brady, Ulrich, No. 627.
      cylindrica Hall, Ulrich, No. 627.
      (?) curta n. sp., Ulrich, No. 627.
      granti n. sp., Ulrich, No. 627.
      (?) robusta n. sp., Ulrich, No. 627.
    Cadulus parianus n. sp., Guppy and Dall, No. 255.
    Calamodon Cope, Wortman, No. 742.
    Calapœcia canadensis Billings, Whiteaves, No. 687.
    Callicrinus, Weller, No. 681.
    Calliostoma lignitica n. sp., Cooper, No. 148.
    Calops
      consors n. sp., Marsh, No. 410.
      cristatus, Marsh, No. 410.
    Calymmene callicephala Green, 1832, Clarke, No. 133.
    Cameroceras Conrad, 1839, Clarke, No. 134.
      hennepini n. sp., Clarke, No. 134.
      proteiforme Hall, 1847, Clarke, No. 134.
        n. sp., Clarke, No. 134.
    Cancellaria
      lanceolata n. sp., Aldrich, No. 19.
      marieana n. sp., Aldrich, No. 18.
      rowelli n. sp., Guppy and Dall, No. 255.

Paleontology—Continued.
  Genera and species described—Continued.
    Canistocrinus Wachsmuth and Springer, James, No. 312.
      pattersoni S. A. Miller, James, No. 312.
      richardsoni Wetherby, James, No. 312.
    Caprina jamaicensis n. sp., Whitfield No. 692.
    Caprinella
      occidentalis n. sp., Whitfield, No. 692.
      quadrangularis n. sp., Whitfield, No. 692.
    Caprinula gigantea n. sp., Whitfield, No. 692.
    Carbonia
      bairdioides, Dawson, No. 174.
      elongata, Dawson, No. 174.
      fabulina, Dawson, No. 174.
    Cardita alticosta Gabb, Cooper, No. 147.
    Carinaria caperata n. sp., Guppy and Dall, No. 255.
    Carinaropsis Hall, Ulrich and Scofield, No. 628.
      acuta n. sp., Ulrich and Scofield, No. 628.
      cunulæ Hall, Ulrich and Scofield, No. 628.
      cymbula Hall, Ulrich and Scofield, No. 628.
      explanata n. sp., Ulrich and Scofield, No. 628.
      minima n. sp., Ulrich and Scofield, No. 628.
      phalera Sardeson, Ulrich and Scofield, No. 628.
    Cassia obtusa n. sp., Knowlton, No. 345.
    Celastrus lindgreni n. sp., Knowlton, No. 345.
    Ceratopsis n. gen., Ulrich, No. 627.
      chambersi Miller, Ulrich, No. 627.
        var. robusta n. var., Ulrich, No. 627.
    Ceraurus pleurexanthemus Green, 1832, Clarke, No. 133.
    Cerithiopsis
      conica n. sp., Aldrich, No. 18.
      dalli n. sp., Aldrich, No. 18.
      fluviatilis n. sp., Aldrich, No. 18.
    Cerithium delicatulum n. sp., Aldrich, No. 18.
    Chætetes perantiquus n. sp., Whiteaves, No. 687.
    Chondrites
      cuneatus n. sp., Whiteaves, No. 687.
      cupressinus Whiteaves, Whiteaves, No. 687.
      gracillimus Whiteaves, Whiteaves, No. 687.
      metissicus n. sp., Dawson, No. 175.
      (Bythotrephis) patulus, Whiteaves, No. 687.
    Chriacus Cope, Matthew, No. 418.
      baldwini (Cope), Matthew, No. 418.
      pelvidens (Cope), Matthew, No. 418.
      schlosserianus Cope, Matthew, No. 418.
      truncatus Cope, Matthew, No. 418.
    Clænodon Scott, Matthew, No. 418.
      corrugatus (Cope), Matthew, No. 418.
      ferox (Cope), Matthew, No. 418.
      (?) protogonioides (Cope), Matthew, No. 418.
    Clathrospira n. gen., Ulrich and Scofield, No. 628.
      conica n. sp., Ulrich and Scofield, No. 628.
      convexa n. sp., Ulrich and Scofield, No. 628.
      subconica Hall, Ulrich and Scofield, No. 628.

Paleontology—Continued.
  Genera and species described—Continued.
    Clathurella
      amicta n. sp., Guppy and Dall, No. 255.
      vendryesiana n. sp., Guppy and Dall, No. 255.
    Clementia (?) tæniosa n. sp., Guppy and Dall, No. 255.
    Clidastes, Williston, No. 710.
    Clidophorus Hall, Ulrich, No. 626.
      consuetus Ulrich, Ulrich, No. 626.
      neglectus Hall, Ulrich, No. 626.
    Clinoceras mumlæforme Whitfield, 1878, Clarke, No. 133.
    Clinopistha (?) antiqua n. sp., Whiteaves, No. 687.
    Clionychia Ulrich, Ulrich, No. 626.
      erecta Hall, Ulrich, No. 626.
      lamellosa Hall, Ulrich, No. 626.
      nitida n. sp., Ulrich, No. 626.
      rhomboidea Ulrich, Ulrich, No. 626.
      undata Emmons, Ulrich, No. 626.
    Clitambonites diversa Shaler, Whiteaves, No. 687.
    Cœlocaulus Œhlert, Ulrich and Scofield, No. 628.
      neglectus n. sp., Ulrich and Scofield, No. 628.
      œhlerti n. sp., Ulrich and Scofield, No. 628.
    Colpomya n. gen., Ulrich, No. 626.
      demissa n. sp., Ulrich, No. 626.
    Columnaria alveolata Goldfuss, Whiteaves, No. 687.
    Conolichas cornutus n. sp., Clarke, No. 133.
    Conoryctes Cope, Wortman, No. 742.
    Conradella n. gen., Ulrich and Scofield, No. 628.
      bellula n. sp., Ulrich and Scofield, No. 628.
      dyeri Hall, Ulrich and Scofield, No. 628.
        var. cellulosa n. var., Ulrich and Scofield, No. 628.
      elegans Miller, Ulrich and Scofield, No. 628.
      fimbriata n. sp., Ulrich and Scofield, No. 628.
      grandis n. sp., Ulrich and Scofield, No. 628.
      imbricata Meek and Worthen, Ulrich and Scofield, No. 628.
      obliqua n. sp., Ulrich and Scofield, No. 628.
      similis n. sp., Ulrich and Scofield, No. 628.
      triangularis n. sp., Ulrich and Scofield, No. 628.
    Conularia asperata Billings, Whiteaves, No. 687.
    Cornulina armigera, Aldrich, No. 18.
    Crangopsis vermiformis (Meek), Ortmann, No. 456.
    Crania chesterensis n. sp., Miller and Gurley, No. 431.
    Crassatella decliva, Aldrich, No. 18.
    Crassatellites (Crassinella) guppyi n. sp., Guppy and Dall, No. 255.
    Cricotus, Williston, No. 706.
    Cryptodiscus Hall, Weller, No. 681.

Paleontology—Continued.
  Genera and species described—Continued.
    Cryptodiscus—Continued.
      bilobus n. sp., Weller, No. 680.
      corrugatus n. sp., Weller, No. 680.
      digitatus n. sp., Weller, No. 680.
      hydei n. sp., Weller, No. 680.
    Cryptozoon
      boreale, Dawson, No. 176.
      occidentale n. sp., Dawson, No. 176.
    Ctenacanthus
      acutus n. sp., Eastman, No. 188.
      xiphias, Eastman, No. 188.
    Ctenerpeton
      alveolatum n. gen. et sp., Cope, No. 149.
      tenuicorne Cope, Cope, No. 149.
    Ctenobolbina Ulrich, Ulrich, No. 627.
      crassa Ulrich, Ulrich, No. 627.
      fulcrata n. sp., Ulrich, No. 627.
    Ctenodonta Salter, Ulrich, No. 626.
      albertina n. sp., Ulrich, No. 626.
      alta Hall, Ulrich, No. 626.
      calvini n. sp., Ulrich, No. 626.
      carinata n. sp., Ulrich, No. 626.
      compressa Ulrich, Ulrich, No. 626.
      fecunda Hall, Ulrich, No. 626.
      filistriata n. sp., Ulrich, No. 626.
      gibberula Salter, Ulrich, No. 626.
      hamburgensis Walcott, Ulrich, No. 626.
      intermedia Ulrich, Ulrich, No. 626.
      logani Salter, Ulrich, No. 626.
      longa Ulrich, Ulrich, No. 626.
      madisonensis n. sp., Ulrich, No. 626.
      medialis n. sp., Ulrich, No. 626.
      nasuta Hall, Ulrich, No. 626.
      nitida Ulrich, Ulrich, No. 626.
      obliqua Hall, Ulrich, No. 626.
      oviformis n. sp., Ulrich, No. 626.
      planodorsata Ulrich, Ulrich, No. 626.
      recurva Ulrich, Ulrich, No. 626.
      scofieldi n. sp., Ulrich, No. 626.
      similis Ulrich, Ulrich, No. 626.
      simulatrix n. sp., Ulrich, No. 626.
      socialis n. sp., Ulrich, No. 626.
      subnasuta n. sp., Ulrich, No. 626.
    Cuneamya Hall and Whitfield, Ulrich, No. 626.
      oblonga n. sp., Ulrich, No. 626.
      truncatula n. sp., Ulrich, No. 626.
    Cyathophycus quebecense Dawson, Dawson, No. 175.
    Cybele winchelli n. sp., Clarke, No. 133.
    Cyclonema Hall, Ulrich and Scofield, No. 628.
      bilix Conrad, Ulrich and Scofield, No. 628.
      gracile n. sp., Ulrich and Scofield, No. 628.
      humerosum n. sp., Ulrich and Scofield, No. 628.
      inflatum n. sp., Ulrich and Scofield, No. 628.
      mediale n. sp., Ulrich and Scofield, No. 628.
      pyramidatum James, Ulrich and Scofield, No. 628.
      simulans n. sp., Ulrich and Scofield, No. 628.
      transversum n. sp., Ulrich and Scofield, No. 628.

Paleontology—Continued.
  Genera and species described—Continued.
    Cyclonema—Continued.
      varicosum Hall, Ulrich and Scofield, No. 628.
      (? Holopea) limatum n. sp., Ulrich and Scofield, No. 628.
    Cylichna aldrichi, Aldrich, No. 18.
    Cyphaspis galenensis n. sp., Clarke, No. 133.
    Cyrtoceras Goldfuss 1832, Clarke, No. 134.
      billingsi Salter 1859, Clarke, No. 134.
      camurum Hall 1847, Clarke, No. 134.
      corniculum Hall 1862, Clarke, No. 134.
      featherstonhaughi n. sp., Clarke, No. 134.
      hallianum d'Orbigny 1850, Clarke, No. 134.
      houghtoni n. sp., Clarke, No. 134.
      laticurvatum Whiteaves, Whiteaves, No. 687.
      manitobense Whiteaves, Whiteaves, No. 687.
      minneapolis n. sp., Clarke, No. 134.
      neleus Hall 1861, Clarke, No. 134.
      norwoodi n. sp., Clarke, No. 134.
      scofieldi n. sp., Clarke, No. 134.
      shumardi n. sp., Clarke, No. 134.
    Cyrtocerina (?) schoolcrafti n. sp., Clarke, No. 134.
    Cyrtodonta Billings, Ulrich, No. 626.
      affinis n. sp., Ulrich, No. 626.
      ampla n. sp., Ulrich, No. 626.
      billingsi n. sp., Ulrich, No. 626.
      canadensis Billings, Whiteaves, No. 687.
      cingulata Ulrich, Ulrich, No. 626.
      gibbera n. sp., Ulrich, No. 626.
      glabella Ulrich, Ulrich, No. 626.
      grandis Ulrich, Ulrich, No. 626.
      janesvillensis n. sp., Ulrich, No. 626.
      obesa n. sp., Ulrich, No. 626.
      obliqua Meek and Worthen, Ulrich, No. 626.
      oviformis Ulrich, Ulrich, No. 626.
      parva n. sp., Ulrich, No. 626.
      persimilis n. sp., Ulrich, No. 626.
      rotulata n. sp., Ulrich, No. 626.
      subovata n. sp., Ulrich, No. 626.
      tenella Ulrich, Ulrich, No. 626.
    Cyrtodontidæ n. fam., Ulrich, No. 626.
    Cyrtolites Conrad, Ulrich and Scofield, No. 628.
      carinatus Miller, Ulrich and Scofield, No. 628.
      (?) dilatatus n. sp., Ulrich and Scofield, No. 628.
      disjunctus n. sp., Ulrich and Scofield, No. 628.
      ornatus Conrad, Ulrich and Scofield, No. 628.
      parvus n. sp., Ulrich and Scofield, No. 628.
      retrorsus n. sp., Ulrich and Scofield, No. 628.
        var. fillmorensis n. var., Ulrich and Scofield, No. 628.
    Cyrtometopus n. gen., Ulrich and Scofield, No. 628.
      nitidula Ulrich, Ulrich and Scofield, No. 628.
      scofieldi n. sp., Clarke, No. 133.

Paleontology—Continued.
  Genera and species described—Continued.
    Cyrtospira n. gen., Ulrich and Scofield, No. 628.
      bicurvata n. sp., Ulrich and Scofield, No. 628.
      tortilis n. sp., Ulrich and Scofield, No. 628.
      wykoffensis n. sp., Ulrich and Scofield, No. 628.
    Cythara
      gibba n. sp., Guppy and Dall, No. 255.
      guppyi n. sp., Guppy and Dall, No. 255.
      mucronata n. sp., Guppy and Dall, No. 255.
      obtusa n. sp., Guppy and Dall, No. 255.
    Cytherea
      newcombei n. sp., Merriam, No. 425.
      vancouverensis n. sp., Merriam, No. 425.
    Cytherella Jones and Bosquet, Ulrich, No. 627.
      (?) rugosa Jones, Ulrich, No. 627.
        var. arcta n. var., Ulrich, No. 627.
      (?) subrotunda n. sp., Ulrich, No. 627.
    Daemonelix, No. 35.
    Dalmanites achates Billings 1860, Clarke, No. 133.
    Diceratherium proavitum, Hatcher, No. 262.
    Dichocrinus bozemanensis n. sp., Miller and Gurley, No. 431.
    Dicranella n. gen., Ulrich, No. 627.
      bicornis n. sp., Ulrich, No. 627.
      marginata n. sp., Ulrich, No. 627.
      (?) simplex n. sp., Ulrich, No. 627.
      spinosa n. sp., Ulrich, No. 627.
    Didymictis
      haydenianus Cope, Matthew, No. 418.
      protenus varaltidens Cope, Osborn, No. 458.
    Dilobella n. gen., Ulrich, No. 627.
      typa n. sp., Ulrich, No. 627.
    Dimetrodon incisivus Cope, Case, No. 108.
    Dimya grandis n. sp., Guppy and Dall, No. 255.
    Dinichthys kepleri n. sp., Claypole, No. 138.
    Dipeltinæ n. subfam., Schuchert, No. 540.
    Dipeltis Packard (emend), Schuchert, No. 540.
      carri n. sp., Schuchert, No. 540.
      diplodiscus Packard, Schuchert, No. 540.
    Diphyphyllum stokesi, Edwards and Haime, Whiteaves, No. 687.
    Discoceras canadense n. sp., Whiteaves, No. 687.
    Dissacus
      navajovius Cope, Matthew, No. 418.
      saurognathus Wortman, Matthew, No. 418.
    Distichium capillaceum, Penhallow, No. 468.
    Divaricella prevaricata n. sp., Guppy and Dall, No. 255.
    Dolatocrinus neglectus n. sp., Miller and Gurley, No. 431.
    Dorycrinus suboviformis n. sp., Miller and Gurley, No. 431.
    Dosinia mercenaroidea, Aldrich, No. 18.
    Drepanella Ulrich, Ulrich, No. 627.
      bigeneris n. sp., Ulrich, No. 627.
      bilateralis n. sp., Ulrich, No. 627.
    Dryopteris idahoensis n. sp., Knowlton, No. 345.

Paleontology—Continued.

- *Genera and species described*—Continued.
  - Leperditella—Continued.
    - germana Ulrich, Ulrich, No. 627.
    - macra n. sp., Ulrich, No. 627.
    - persimilis n. sp., Ulrich, No. 627.
  - Leperditia Ronault, Ulrich, No. 627.
    - fabulites Conrad, Ulrich, No. 627.
    - okeni, Dawson, No. 174.
  - Lepton (?) alabamensis n. sp., Aldrich, No. 18.
  - Levifusus pagoda, Aldrich, No. 18.
  - Lichas (Terataspis) grandis Hall, Whitfield, No. 690.
  - Limopsis subangularis n. sp., Guppy and Dall, No. 255.
  - Lingula
    - elongata Hall, Whiteaves, No. 687.
    - iowensis Owen, Whiteaves, No. 687.
    - obtusa Hall, Whiteaves, No. 687.
  - Lingulepis meeki n. sp., Walcott, No. 656.
  - Linuparus atavus n. sp., Ortmann, No. 457.
  - Liospira n. gen., Ulrich and Scofield, No. 628.
    - abrupta n. sp., Ulrich and Scofield, No. 628.
    - americana Billings, Ulrich and Scofield, No. 628.
    - angulata n. sp., Ulrich and Scofield, No. 628.
    - angustata n. sp., Ulrich and Scofield, No. 628.
    - decipiens n. sp., Ulrich and Scofield, No. 628.
    - micula Hall, Ulrich and Scofield, No. 628.
    - (?) mundula n. sp., Ulrich and Scofield, No. 628.
    - obtusa n. sp., Ulrich and Scofield, No. 628.
    - persimilis n. sp., Ulrich and Scofield, No. 628.
    - progne Billings, Ulrich and Scofield, No. 628.
    - rugata n. sp., Ulrich and Scofield, No. 628.
    - subconcava n. sp., Ulrich and Scofield, No. 628.
    - vitruvia Billings, Ulrich and Scofield, No. 628.
  - Liotia veresimilis n. sp., Guppy and Dall, No. 255.
  - Littorina subobesa n. sp., Cooper, No. 148.
  - Lophospira Whitfield, Ulrich and Scofield, No. 628.
    - abnormis n. sp., Ulrich and Scofield, No. 628.
    - acuminata n. sp., Ulrich and Scofield, No. 628.
    - ampla n. sp., Ulrich and Scofield, No. 628.
    - augustina Billings, Ulrich and Scofield, No. 628.
      - var. minnesotensis n. var., Ulrich and Scofield, No. 628.
    - bicincta Hall, Ulrich and Scofield, No. 628.
    - bowdeni Safford, Ulrich and Scofield, No. 628.
    - centralis n. sp., Ulrich and Scofield, No. 628.
    - concinnula n. sp., Ulrich and Scofield, No. 628.
    - conoidea n. sp., Ulrich and Scofield, No. 628.

Paleontology—Continued.

- *Genera and species described*—Continued.
  - Lophospira—Continued.
    - conradana n. sp., Ulrich and Scofield, No. 628.
    - decursa n. sp., Ulrich and Scofield, No. 628.
    - elevata n. sp., Ulrich and Scofield, No. 628.
    - fillmorensis n. sp., Ulrich and Scofield, No. 628.
    - helicteres var. wisconsinensis n. var., Ulrich and Scofield, No. 628.
    - humilis n. sp., Ulrich and Scofield, No. 628.
    - medialis n. sp., Ulrich and Scofield, No. 628.
      - var. burginensis n. var., Ulrich and Scofield, No. 628.
    - multigruma Miller, Ulrich and Scofield, No. 628.
    - obliqua n. sp., Ulrich and Scofield, No. 628.
    - oweni n. sp., Ulrich and Scofield, No. 628.
    - peracuta n. sp., Ulrich and Scofield, No. 628.
    - perangulata Hall, Ulrich and Scofield, No. 628.
    - perforata n. sp., Ulrich and Scofield, No. 628.
    - perlamellosa n. sp., Ulrich and Scofield, No. 628.
    - procera n. sp., Ulrich and Scofield, No. 628.
    - producta n. sp., Ulrich and Scofield, No. 628.
    - pulchella n. sp., Ulrich and Scofield, No. 628.
    - quadrisulcata n. sp., Ulrich and Scofield, No. 628.
    - saffordi n. sp., Ulrich and Scofield, No. 628.
    - serrulata Salter, Ulrich and Scofield, No. 628.
    - spironema n. sp., Ulrich and Scofield, No. 628.
    - sumnerensis Safford, Ulrich and Scofield, No. 628.
    - tenuistriata n. sp., Ulrich and Scofield No. 628.
    - (? Seelya) (?) knoxvillensis n. sp., Ulrich and Scofield, No. 628.
      - lirata n. sp., Ulrich and Scofield, No. 628.
      - (?) notabilis n. sp., Ulrich and Scofield, No. 628.
      - (?) trochonemoides n. sp., Ulrich and Scofield, No. 628.
  - Loxonema winnipegense Whiteaves, Whiteaves, No. 687.
  - Lucina
    - astartiformis n. sp., Aldrich, No. 18.
    - pauperata n. sp., Guppy and Dall, No. 255.
    - textilis n. sp., Guppy and Dall, No. 255.
  - Lyrodesma Conrad, Ulrich, No. 626.
    - acuminatum n. sp., Ulrich, No. 626.
    - cannonense n. sp., Ulrich, No. 626.
  - Machærodus, Smith, No. 9.
  - Maclurea (Leuseur) Woodward, Ulrich and Scofield, No. 628.
    - affinis Bill., Whitfield, No. 691.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Maclurea—Continued.
    - bigsbyi Hall, Ulrich and Scofield, No. 628.
      - var. dixonensis n. var., Ulrich and Scofield, No. 628.
    - crassa n. sp., Ulrich and Scofield, No. 628.
      - var. macra n. var., Ulrich and Scofield, No. 628.
    - depressa n. sp., Ulrich and Scofield, No. 628.
    - knoxvillensis n. sp., Ulrich and Scofield, No. 628.
    - nitida n. sp., Ulrich and Scofield, No. 628.
  - Macluria (Maclurina) manitobensis Whiteaves, Whiteaves, No. 687.
  - Maclurina n. gen., Ulrich and Scofield, No. 628.
    - cuneata Whitfield, Ulrich and Scofield, No. 628.
    - manitobensis Whiteaves, Ulrich and Scofield, No. 628.
    - subrotunda Whitfield, Ulrich and Scofield, No. 628.
  - Macronotella n. gen., Ulrich, No. 627.
    - scofieldi n. sp., Ulrich, No. 627.
  - Macropetalichthys, Eastman, No. 190.
  - Major Ulrich, Ulrich, No. 626.
  - Mangilia consentanea n. sp., Guppy and Dall, No. 255.
  - Marginella
    - amina n. sp., Guppy and Dall, No. 255.
    - domingoensis n. sp., Guppy and Dall, No. 255.
    - latissima n. sp., Guppy and Dall, No. 255.
    - limonensis n. sp., Guppy and Dall, No. 255.
    - (Persicula) arcuata n. sp., Guppy and Dall, No. 255.
    - solitaria n. sp., Guppy and Dall, No. 255.
  - Mariacrinus Hall, James, No. 312.
    - harrisi S. A. Miller, James, No. 312.
  - Matheria Billings, Ulrich, No. 626.
    - rugosa Ulrich, Ulrich, No. 626.
  - Mathilda
    - plexita n. sp., Guppy and Dall, No. 255.
    - regularis Meyer, Aldrich, No. 18.
  - Meekospira n. gen., Ulrich and Scofield, No. 628.
    - subconica n. sp., Ulrich and Scofield, No. 628.
  - Megalomphala n. gen., Ulrich and Scofield, 628.
  - Mesotrypa selkirkensis n. sp., Whiteaves, No. 687.
  - Minoceras Hall, Ulrich and Scofield, No. 628.
  - Mioclænus Cope, Matthew, No. 418.
    - acolytus (Cope), Matthew, No. 418.
    - inæquidens (Cope), Matthew, No. 418.
    - lemuroides n. sp., Matthew, No. 418.
    - turgidunculus Cope, Matthew, No. 418.
    - turgidus Cope, Matthew, No. 418.
  - Mixodectes Cope, Matthew, No. 418.
  - Modiolodon n. gen., Ulrich, No. 626.
    - (?) gibbus n. sp., Ulrich, No. 626.
    - patulus n. sp., Ulrich, No. 626.
  - Modiolopsidæ n. fam., Ulrich, No. 626.
  - Modiolopsis Hall, Ulrich, No. 626.
    - angustifrons n. sp., Whiteaves, No. 687.
    - arguta n. sp., Ulrich, No. 626.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Modiolopsis—Continued.
    - chatfieldensis n. sp., Ulrich, No. 626.
    - concava Ulrich, Ulrich, No. 626.
    - concentrica Hall and Whitfield, Ulrich, No. 626.
    - (?) consimilis n. sp., Ulrich, No. 626.
    - excellens n. sp., Ulrich, No. 626.
    - mytiloides Hall, Ulrich, No. 626.
    - nan. n. sp., Ulrich, No. 626.
    - obsoleta n. sp., Ulrich, No. 626.
    - oweni n. sp., Ulrich, No. 626.
    - parviuscula Billings, Whiteaves, No. 687.
    - similis Ulrich, Ulrich, No. 626.
  - Mogulia Waagen, Ulrich and Scofield, No. 628.
  - Moorea Jones and Kirkby, Ulrich, No. 627.
    - angularis n. sp., Ulrich, No. 627.
    - (?) perplexa n. sp., Ulrich, No. 627.
    - punctata n. sp., Ulrich, No. 627.
  - Murchisonia cassina n. sp., Whitfield, No. 691.
  - Myelopteris topekensis n. sp., Penhallow, No. 469.
  - Myrica
    - (?) idahoensis n. sp., Knowlton, No. 345.
    - lanceolata n. sp., Knowlton, No. 345.
  - Nanno aulema n. sp., Clarke, No. 134.
  - Nassa newcombei n. sp., Merriam, No. 425.
  - Nautilus perkinsi n. sp., Whitfield, No. 691.
  - Nileus striatus n. sp., Whitfield, No. 691.
    - vigilans, Meek and Worthen (sp.), 1875, Clarke, No. 133.
  - Nimravus Cope, Smith, No. 9.
  - Obolella (Linnarssonia) pretiosa Billings, Dawson, No. 175.
  - Odontopleura parvula Wolcott (sp.), 1877, Clarke, No. 133.
  - Odontostomia insignifica n. sp., Aldrich, No. 18.
  - Oliva plicata n. sp., Guppy and Dall, No. 255.
  - Olivella indivisa n. sp., Guppy and Dall, No. 255.
  - Omospira n. gen., Ulrich and Scofield, No. 628.
    - alexandra Billings, Ulrich and Scofield, No. 628.
    - laticinnota n. sp., Ulrich and Scofield, No. 628.
  - Oncocera
    - carveri n. sp., Clarke, No. 134.
    - douglassi n. sp., Clarke, No. 134.
    - exiguum Billings, 1860, Clarke, No. 134.
    - lycus Hall, 1861, Clarke, No. 134.
    - magnum Whiteaves, Whiteaves, No. 687.
    - (magnum ? var.) intermedium, Whiteaves, No. 687.
    - minnesotense n. sp., Clarke, No. 134.
    - pandion Hall, 1861, Clarke, No. 134.
    - whiteavesii Miller, Whiteaves, No. 687.
  - Onychodectes Cope, Wortman, No. 742.
  - Ophiletina n. gen., Ulrich and Scofield, No. 628.
    - angularis n. sp., Ulrich and Scofield, No. 628.
    - sublaxa n. sp., Ulrich and Scofield, No. 628.
  - Opis triangulata Cooper (Stanton), Cooper, No. 148.
  - Oreodon culbertsonii Leidy, Stewart, No. 582.
  - Ornithostoma ingens, Williston, No. 705.

Paleontology—Continued.
Genera and species described—Continued.
Ornithotarsus immanis Cope, Woolman, No. 741.
Orthis
corpulenta Sardeson, Sardeson, No. 525.
emacerata Hall, Sardeson, No. 525.
futilis n. sp., Sardeson, No. 525.
ignota n. sp., Sardeson, No. 525.
meeki S. A. Miller, Sardeson, No. 525.
multisecta Meek, Sardeson, No. 525.
porrecta n. sp., Sardeson, No. 525.
rogata Sardeson, Sardeson, No. 525.
tersa Sardeson, Sardeson, No. 525.
testudinaria Sardeson, Sardeson, No. 525.
Orthoceras
cf. amplicameratum Hall, 1847, Clarke, No. 134.
anellus Conrad, 1843, Clarke, No. 134.
beltramii n. sp., Clarke, No. 134.
bilineatum Hall, 1847, Clarke, No. 134.
junceum Hall, 1847, Clarke, No. 134.
lesueri n. sp., Clarke, No. 134.
multicameratum Emmons, 1842, Clarke, No. 134.
nicolleti n. sp., Clarke, No. 134.
perroti n. sp., Clarke, No. 134.
olorus Hall, 1877, Clarke, No. 134.
selkirkensis Whiteaves, Whiteaves, No. 687.
sociale Hall, 1877, Clarke, No. 134.
tenuistriatum Hall, 1847, Clarke, No. 134.
winnipegense Whiteaves, Whiteaves, No. 687.
Orthodesma Hall and Whitfield, Ulrich, No. 626.
affine n. sp., Whiteaves, No. 687.
canaliculatum, Ulrich, No. 626.
minnesotense Ulrich, Ulrich, No. 626.
schucherti n. sp., Ulrich, No. 626.
subnasutum Meek and Worthen, Ulrich, No. 626.
Oscilla indiscreta n. sp., Guppy and Dall, No. 255.
Owenella n. gen., Ulrich and Scofield, No. 628.
antiquata Whitfield sp., Ulrich and Scofield, No. 628.
Oxyaena huerfanensis n. sp., Osborn, No. 458.
Oxyclænus (Cope) Scott, Matthew, No. 418.
cuspidatus Cope, Matthew, No. 418.
simplex (Cope), Matthew, No. 418.
Oxydiscus Koken, Ulrich and Scofield, No. 628.
cristatus Safford, Ulrich and Scofield, No. 628.
subacutus n. sp., Ulrich and Scofield, No. 628.
Palæamæa Hall and Whitfield, Ulrich and Scofield, No. 628.
humilis n. sp., Ulrich and Scofield, No. 628.
Palæaster wyckoffi n. sp., Miller and Gurley, No. 431.
Palæophycus Hall, Duden, No. 186.
new-albanense n. sp., Duden, No. 186.
lineare n. sp., Duden, No. 186.
Palæopteria n. gen., Whiteaves, No. 687.
parvula n. sp., Whiteaves, No. 687.
Palæosaccus Hinde, Dawson, No. 175.
dawsoni Hinde, Dawson, No. 175.

Paleontology—Continued.
Genera and species described—Continued.
Palæosyops borealis Cope, Matthew, No. 419.
Parenchymophycus n. gen., Duden, No. 186.
asphalticum n. sp., Duden, No. 186.
Pasceolus gregarius? Billings, Whiteaves, No. 687.
Patella geometrica n. sp., Merriam, No. 425.
Patellostium Waagen, Ulrich and Scofield, No. 628.
Paterula amii n. sp., Schuchert, No. 539.
Patriofelis ulta Leidy, Osborn, No. 458.
Periptychus
carinidens Cope, Matthew, No. 418.
coarctatus Cope, Matthew, No. 418.
rhabdodon (Cope), Matthew, No. 418.
Phasianella sp.?, Guppy and Dall, No. 255.
Phenacodus primævus Cope, Osborn, No. 459.
Philine alabamensis n. sp., Aldrich, No. 18.
Pholadomya (Triplicosta) progressiva n. sp., Cooper, No. 148.
Pholidops greenei n. sp., Miller and Gurley, No. 431.
Phos
fasciolatus n. sp., Guppy and Dall, No. 255.
gabbii n. sp., Guppy and Dall, No. 255.
metuloides n. sp., Guppy and Dall, No. 255.
(Strongylocera) chipolanus n. sp., Guppy and Dall, No. 255.
Phragmites aquehongensis n. sp., Hollick, No. 299.
Phyllites flexuosus n. sp., Knowlton, No. 345.
obscurus n. sp., Knowlton, No. 345.
Picea nigra, Penhallow, No. 471.
Piloceras newton-winchelli n. sp., Clarke, No. 134.
Pinus sp., Knowlton, No. 345.
Platecarpus, Williston, No. 710.
Platyceras
(?) depressum n. sp., Ulrich and Scofield, No. 628.
indianense n. sp., Miller and Gurley, No. 431.
wisconsinensis n. sp., Ulrich and Scofield, No. 628.
Platycrinus
bozemanensis n. sp., Miller and Gurley, No. 431.
bridgerensis n. sp., Miller and Gurley, No. 431.
sharonensis n. sp., Miller and Gurley, No. 431.
Platymetopus
bicornis Ulrich (sp.), 1892, Clarke, No. 133.
cucullus Meek and Worthen (sp.), 1865, Clarke, No. 133.
robbinsi Ulrich (sp.), 1892, Clarke, No. 133.
Plesiosaurus gouldii n. sp., Williston, No. 707.
Plethocardia Ulrich, Ulrich, No. 626.
suberecta Ulrich, Ulrich, No. 626.
umbonata Ulrich, Ulrich, No. 626.
Plethospira n. gen., Ulrich and Scofield, No. 628.
semele Hall, Ulrich and Scofield, No. 628.
striata n. sp., Ulrich and Scofield, No. 628.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Pleurotoma
    - pulcherrima, Aldrich, No. 18.
    - venusta, Aldrich, No. 18.
  - Pleurotomaria
    - (?) margaritoides n. sp., Whiteaves, No. 687.
    - muralis D. D. Owen, Whiteaves, No. 687.
    - stokesiana n. sp., Whiteaves, No. 687.
  - Populus
    - eotremuloides n. sp., Knowlton, No. 345.
    - lindgreni n. sp., Knowlton, No. 345.
    - occidentalis n. sp., Knowlton, No. 345.
  - Potamogeton
    - pectinatus, Penhallow, No. 471.
    - pusillus, Penhallow, No. 471.
  - Poterioceras
    - apertum Whiteaves 1889, Clarke, No. 134.
    - gracile Whiteaves, Whiteaves, No. 687.
    - nobile Whiteaves, Whiteaves, No. 687.
  - Primitia Jones and Holl, Ulrich, No. 627.
    - celesta n. sp., Ulrich, No. 627.
    - duplicata n. sp., Ulrich, No. 627.
    - gibbera n. sp., Ulrich, No. 627.
    - mammata n. sp., Ulrich, No. 627.
    - micula n. sp., Ulrich, No. 627.
    - minutissima n. sp., Ulrich, No. 627.
    - sancti pauli n. sp., Ulrich, No. 627.
    - tumidula n. sp., Ulrich, No. 627.
    - uphami n. sp., Ulrich, No. 627.
  - Primitiella n. gen., Ulrich, No. 627.
    - constricta n. sp., Ulrich, No. 627.
    - fillmorensis n. sp., Ulrich, No. 627.
    - limbata n. sp., Ulrich, No. 627.
    - simulans n. sp., Ulrich, No. 627.
    - unicornis Ulrich, Ulrich, No. 627.
  - Prœtus
    - parviusculus Hall 1866, Clarke, No. 133.
    - ?placidus n. sp., Vogdes, No. 653.
  - Prolobella n. gen., Ulrich, No. 626.
    - striatula n. sp., Ulrich, No. 626.
  - Protaræa (vetusta? var.) magna, Whiteaves, No. 687.
  - Protocaris Walcott, Schuchert, No. 540.
  - Protoceras
    - celer Marsh, Marsh, Nos. 407, 410.
    - comptus Marsh, Marsh, No. 410.
  - Protochriacus Scott, Matthew, No. 418.
    - attenuatus Osborn and Earle, Matthew, No. 418.
    - hyattianus (Cope), Matthew, No. 418.
    - priscus (Cope), Matthew, No. 418.
  - Protogonodon Scott, Matthew, No. 418.
    - stenognathus n. sp., Matthew, No. 418.
  - Protorthis
    - cassinensis n. sp., Whitfield, No. 691.
    - minima n. sp., Whitfield, No. 691.
  - Protoselene n. gen., Matthew, No. 418.
  - Protospongia
    - coronata Dawson, Dawson, No. 175.
    - cyathiformis Dawson, Dawson, No. 175.
    - delicatula Dawson, Dawson, No. 175.
    - mononema Dawson, Dawson, No. 175.
    - polynema Dawson, Dawson, No. 175.
    - tetranema Dawson, Dawson, No. 175.
  - Protostega, Case, No. 109.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Protowarthia n. gen., Ulrich and Scofield, No. 628.
    - cancellata Hall, Ulrich and Scofield, No. 628.
    - concinna n. sp., Ulrich and Scofield, No. 628.
    - granistriata n. sp., Ulrich and Scofield, No. 628.
    - obesa n. sp., Ulrich and Scofield, No. 628.
    - pervoluta n. sp., Ulrich and Scofield, No. 628.
    - planodorsata n. sp., Ulrich and Scofield, No. 628.
    - rectangularis n. sp., Ulrich and Scofield, No. 628.
    - subcompressa n. sp., Ulrich and Scofield, No. 628.
  - Pseudosophærexochus trentonensis n. sp., Clarke, No. 133.
  - Psiloconcha n. gen., Ulrich, No. 626.
    - minnesotensis n. sp., Ulrich, No. 626.
  - Psittacotherium Cope, Wortman, No. 742.
  - Pterygometopus
    - callicephalus Hall (sp.), Clarke, No. 133.
    - eboraceus n. sp., Clarke, No. 133.
    - intermedius Walcott (sp.) 1877, Clarke, No. 133.
    - schmidti n. sp., Clarke, No. 133.
  - Ptychocrinus Wachsmuth and Springer, James, No. 312.
    - angularis Miller and Dyer, James, No. 312.
    - parvus Hall, James, No. 312.
  - Ptychopyge ulrichi n. sp., Clarke, No. 132.
  - Pyramidella
    - (Longchæus) jamaicensis n. sp., Guppy and Dall, No. 255.
    - forulata n. sp., Guppy and Dall, No. 255.
  - Pyrazisinus? haitensis, n. sp., Guppy and Dall, No. 255.
  - Quercus
    - consimilis Newby., Knowlton, No. 345.
    - idahoensis n. sp., Knowlton, No. 345.
    - payettensis n. sp., Knowlton, No. 345.
    - simulata n. sp., Knowlton, No. 345.
  - Radiolites
    - adhærens n. sp., Whitfield, No. 692.
    - annulosus n. sp., Whitfield, No. 692.
    - cancellatus n. sp., Whitfield, No. 692.
    - macroplicatus n. sp., Whitfield, No. 692.
    - rudis n. sp., Whitfield, No. 692.
    - (Lapeirousia) nicholasi n. sp., Whitfield, No. 692.
  - Rafinesquina lata Whiteaves, Whiteaves, No. 687.
  - Raphistoma Hall, Ulrich and Scofield, No. 628.
    - peracutum n. sp., Ulrich and Scofield, No. 628.
    - richmondensis n. sp., Ulrich and Scofield, No. 628.
  - Raphistomidæ n. fam., Ulrich and Scofield, No. 628.
  - Raphistomina n. gen., Ulrich and Scofield, No. 628.
    - denticulata n. sp., Ulrich and Scofield, No. 628.
    - lapicida Salter, Ulrich and Scofield, No. 628.
    - modesta n. sp., Ulrich and Scofield, No. 628.
    - rugata n. sp., Ulrich and Scofield, No. 628.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Remeleceras clarkense n. sp., Miller and Gurley, No. 431.
  - Remondia Gabb, Stanton, No. 579.
    - furcata Gabb, Stanton, No. 579.
    - robbinsi (White), Stanton, No. 579.
  - Reteocrinus Billings 1859, James, No. 312.
    - cognatus S. A. Miller, James, No. 312.
    - gracilis Wetherby, James, No. 312.
    - magnificus S. A. Miller, James, No. 312.
    - o'nealli Hall, James, No. 312.
  - Rhinidictya n. sp., Whiteaves, No. 687.
  - Rhinopora prima n. sp., Whitfield, No. 691.
  - Rhodocrinus
    - bozemanensis n. sp., Miller and Gurley, No. 431.
    - bridgerensis n. sp., Miller and Gurley, No. 431.
    - douglassi n. sp., Miller and Gurley, No. 431.
  - Rhus payettensis n. sp., Knowlton, No. 345.
  - Rhynchonella anticostiensis var., Whiteaves, No. 687.
  - Rhytimya Ulrich, Ulrich, No. 626.
    - recta n. sp., Whiteaves, No. 687.
    - sinuata n. sp., Ulrich, No. 626.
  - Ringicula
    - alabamensis n. sp., Aldrich, No. 18.
    - biplicata, Aldrich, No. 18.
    - butleriana, Aldrich, No. 18.
    - butleriana var. lignitifera n. var., Aldrich, No. 18.
    - claibornensis n. sp., Aldrich, No. 18.
    - dalli, Aldrich, No. 18.
    - lisbonensis, n. sp., Aldrich, No. 18.
    - mississippiensis, Aldrich, No. 18.
    - trapaquara, Aldrich, No. 18.
  - Rissoa (Alvania) pariana n. sp., Guppy and Dall, No. 255.
  - Rusophycus
    - chesterense n. sp., Miller and Gurley, No. 431.
    - montanense n. sp., Miller and Gurley, No. 431.
  - Saffordia n. gen., Ulrich, No. 626.
    - modesta Ulrich, Ulrich, No. 626.
    - sulcodorsata Ulrich, Ulrich, No. 626.
    - ventralis n. sp., Ulrich, No. 626.
  - Sagenodus
    - brownlæ n. sp., Cope, No. 149.
    - conchiolepis n. sp., Cope, No. 149.
    - foliatus n. sp., Cope, No. 149.
    - gurleianus n. sp., Cope, No. 149.
    - lacovianus n. sp., Cope, No. 149.
    - magister n. sp., Cope, No. 149.
    - occidentalis Newb., Cope, No. 149.
    - quincunciatus n. sp., Cope, No. 149.
    - reticulatus Newberry, Cope, No. 149.
  - Salix augusta Al. Br., Knowlton, No. 345.
  - Salpingostoma Roemer, Ulrich and Scofield, No. 628.
    - buelli Whitfield, Ulrich and Scofield, No. 628.
    - imbricata n. sp., Ulrich and Scofield, No. 628.
    - richmondensis n. sp., Ulrich and Scofield, No. 628.
    - sculptilis n. sp., Ulrich and Scofield, No. 628.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Sanguinolaria unioides n. sp., Guppy and Dall, No. 255.
  - Sarcothraustes Cope, Matthew, No. 418.
    - antiquus Cope, Matthew, No. 418.
  - Sauropleura latithorax n. sp., Cope, No. 149.
  - Scala
    - exquisita n. sp., Aldrich, No. 18.
    - octolineata Con., Aldrich, No. 18.
    - unilineata, Aldrich, No. 18.
  - Scaphander ligniticus n. sp., Aldrich, No. 18.
  - Scenella Billings, Ulrich and Scofield, No. 628.
    - affinis n. sp., Ulrich and Scofield, No. 628.
    - beloitensis n. sp., Ulrich and Scofield, No. 628.
    - compressa n. sp., Ulrich and Scofield, No. 628.
    - magnifica n. sp., Ulrich and Scofield, No. 628.
    - obtusa Sardeson, Ulrich and Scofield, No. 628.
    - radialis n. sp., Ulrich and Scofield, No. 628.
    - superba Billings, Ulrich and Scofield, No. 628.
  - Schizolopha Ulrich, Ulrich and Scofield, No. 628.
    - moorei n. sp., Ulrich and Scofield, No. 628.
    - textilis n. sp., Ulrich and Scofield, No. 628.
  - Schmidtella Ulrich, Ulrich, No. 627.
    - affinis n. sp., Ulrich, No. 627.
    - brevis n. sp., Ulrich, No. 627.
    - crassimarginata Ulrich, Ulrich, No. 627.
    - incompta n. sp., Ulrich, No. 627.
    - subrotunda n. sp., Ulrich, No. 627.
    - umbonata n. sp., Ulrich, No. 627.
  - Scintilla clarkeana n. sp., Aldrich, No. 18.
  - Seelya n. gen., Ulrich and Scofield, No. 628.
    - mundula n. sp., Ulrich and Scofield, No. 628.
  - Sequoia angustifolia? Lx., Knowlton, No. 345.
  - Serpulites dissolutus Billings, Whiteaves, No. 687.
  - Sigaretus costatus n. sp., Cooper, No. 148.
  - Sistrum (Ricinula?) cretaceum n. sp., Cooper, No. 148.
  - Smilodon (syn. Dinobastis Cope), Adams, No. 9.
  - Solariella altiuscula n. sp., Guppy and Dall, No. 255.
  - Solariorbis
    - clypeatus n. sp., Guppy and Dall, No. 255.
    - subangulatus Meyer var., Aldrich, No. 18.
  - Solarium sp.?, Guppy and Dall, No. 255.
  - Solenospira n. gen., Ulrich and Scofield, No. 628.
    - pagoda Salter, Ulrich and Scofield, No. 628.
    - pagoda Salter var. occidentalis, Whiteaves, No. 687.
    - prisca Billings, Ulrich and Scofield, No. 628.
  - Sphenolium S. A. Miller, Ulrich, No. 626.
    - parallelum n. sp., Ulrich, No. 626.
    - striatum n. sp., Ulrich, No. 626.
  - Sporangites radiatus n. sp., Duden, No. 186.
  - Sportella gregorioi Coss., Aldrich, No. 18.

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- *Genera and species described*—Continued.
  - Squama n. gen., Logan, No. 389.
    - lata n. sp., Logan, No 389.
    - spissa n. sp., Logan, No. 389.
  - Stachella Waagen, Ulrich and Scofield, No. 628.
  - Steganocrinus
    - albersi n. sp., Miller and Gurley, No. 431.
    - blairi n. sp., Miller and Gurley, No. 431.
    - griffithi n. sp., Miller and Gurley, No. 431.
    - sharonensis n. sp., Miller and Gurley, No. 431.
  - Stenotheca Salter, Ulrich and Scofield, No. 628.
    - exerta Sardeson, Ulrich and Scofield, No. 628.
    - unguiformis n. sp., Ulrich and Scofield, No. 628.
  - Stephanella hindii n. sp., Dawson, No. 175.
  - Stereocrinus indianensis n. sp., Miller and Gurley, No. 431.
  - Stomatopora canadensis n. sp., Whiteaves, No. 687.
  - Stramentum n. gen., Logan, No. 389.
    - haworthi n. sp., Logan, No. 389.
    - tabulatum n. sp., Logan, No. 389.
  - Streptelasma
    - corniculum Hall, Sardeson, No. 528.
    - profundum (Owen), Sardeson, No. 528
    - robustum Whiteaves, Whiteaves, No. 687.
  - Strombina mira n. sp., Guppy and Dall, No. 255.
  - Strombinella Dall, Guppy and Dall, No. 255.
    - acuformis n. sp., Guppy and Dall, No. 255.
  - Strophostylus Hall, Ulrich and Scofield, No. 628.
    - textilis n. sp., Ulrich and Scofield, No. 628.
  - Stylinodon
    - cylindrifer Cope, Wortman, No. 742.
    - mirus Marsh, Wortman, No. 742.
    - mirus, Marsh, No. 409.
  - Subulites Conrad, Ulrich and Scofield, No. 628.
    - beloitensis n. sp., Ulrich and Scofield, No. 628.
    - canadensis n. sp., Ulrich and Scofield, No. 628.
    - conradi, n. sp., Ulrich and Scofield, No. 628.
    - dixonensis n. sp., Ulrich and Scofield, No. 628.
    - nanus n. sp., Ulrich and Scofield, No. 628.
    - parvus n. sp., Ulrich and Scofield, No. 628.
    - pergracilis n. sp., Ulrich and Scofield. No. 628.
    - regularis n. sp., Ulrich and Scofield, No. 628.
    - sp. undet., Ulrich and Scofield, No. 628.
  - Surcula gabbi, Aldrich, No. 18.
  - Talarocrinus patei n. sp., Miller and Gurley, No. 431.
  - Tamiobatis vetustis, n. gen. et sp., Eastman, No. 189.
  - Technophorus Miller, Ulrich, No. 626.
    - divaricatus Ulrich, Ulrich, No. 626.
    - extenuatus Ulrich, Ulrich, No. 626.

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- *Genera and species described*—Continued.
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    - filistriatus Ulrich, Ulrich, No. 626.
    - subacutus Ulrich, Ulrich, No. 626.
  - Temnochilus greenense n. sp., Miller and Gurley, No. 431.
  - "Terebra" plicifera, Aldrich, No. 18.
  - Teredina sp., Guppy and Dall, No. 255.
  - Tetradella Ulrich, Ulrich, No. 627.
    - lunatifera Ulrich, Ulrich, No. 627.
    - quadrilirata Hall and Whitfield, Ulrich, No. 627.
  - Tetranota n. gen., Ulrich and Scofield, No. 628.
    - bidorsata Hall, Ulrich and Scofield, No. 628.
      - var. minor n. var., Ulrich and Scofield, No. 628.
    - macra n. sp., Ulrich and Scofield, No. 628.
    - obsoleta n. sp., Ulrich and Scofield, No. 628.
    - sexicarinata n. sp., Ulrich and Scofield, No. 628.
    - wisconsinensis Whitfield, Ulrich and Scofield, No. 628.
  - Thaleops ovata Conrad, 1843, Clarke, No. 133.
  - Thamnograptus affinis nom. prov., Whiteaves, No. 687.
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  - Trapa
    - americana n. sp., Knowlton, No. 345.
    - (?) occidentalis n. sp., Knowlton, No. 345.
  - Tremanotus Hall, Ulrich and Scofield, No. 628.
  - Tricentes Cope, Matthew, No. 418.
    - crassicollidens Cope, Matthew, No. 418.
    - subtrigonus (Cope), Matthew, No. 418.
  - Trichospongia hystrix n. sp., Whiteaves, No. 687.
  - Triforis sp. ?, Guppy and Dall, No. 255.
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    - gaudrianus (Cope), Matthew, No. 418.
    - heilprianus Cope, Matthew, No. 418.
  - Triplicosta n. subgen., Cooper, No. 148.
  - Triptoceras sp. ?, Clarke, No. 134.
    - lambi Whiteaves, 1891, Clarke, No. 134.
    - lambii Whiteaves, Whiteaves, No. 687.
    - oweni n. sp., Clarke, No. 134.
    - planoconvexum Hall, 1861, Clarke, No. 134.
    - planodorsatum, Whitfield, 1882, Clarke, No. 134.
    - semiplanatum Whiteaves, Whiteaves, No. 687.
  - Trochoceras (?) mccharlesii Whiteaves, Whiteaves, No. 687.
  - Trochonema Salter, Ulrich and Scofield, No. 628.
    - altum n. sp., Ulrich and Scofield, No. 628.
    - beachi ? Whitfield, Ulrich and Scofield, No. 628.
    - beloitense Whitfield, Ulrich and Scofield, No. 628.
    - bellulum n. sp., Ulrich and Scofield, No. 628.
    - eccentricum n. sp., Ulrich and Scofield, No. 628.
    - fragile n. sp., Ulrich and Scofield, No. 628.

- **Paleontology**—Continued.
  - *Genera and species described*—Continued.
    - Trochonema—Continued.
      - madisonense n. sp., Ulrich and Scofield, No. 628.
      - niota Hall, Ulrich and Scofield, No. 628.
      - retrorsum n. sp., Ulrich and Scofield, No. 628.
      - rugosum n. sp., Ulrich and Scofield, No. 628.
      - subcrassum n. sp., Ulrich and Scofield, No. 628.
      - umbilicatum Hall, Ulrich and Scofield, No. 628.
      - vagrans n. sp., Ulrich and Scofield, No. 628.
      - (Eunema) arctatum n. sp., Ulrich and Scofield, No. 628.
        - nitidum n. sp., Ulrich and Scofield, No. 628.
        - obsoletum n. sp., Ulrich and Scofield, No. 628.
        - robbinsi n. sp., Ulrich and Scofield, No. 628.
        - salteri n. sp., Ulrich and Scofield, No. 628.
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    - Tryblidium Lindström, Ulrich and Scofield, No. 628.
      - modestum n. sp., Ulrich and Scofield, No. 628.
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      - (Mathilda) leana n. sp., Aldrich, No. 18.
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      - angulata n. sp., Guppy and Dall, No. 255.
      - plastica n. sp., Guppy and Dall, No. 255.
      - simplicior n. sp., Guppy and Dall, No. 255.
      - tenuilineata n. sp., Guppy and Dall, No. 255.
      - turritissima n. sp., Guppy and Dall, No. 255.
      - (Stylopsis) ictona n. sp., Guppy and Dall, No. 255.
    - Turritella
      - arata n. sp., Guppy and Dall, No. 255.
      - belvideri n. sp., Cragin, No. 152.
      - diversilineata n. sp., Merriam, No. 425.
    - Tylosaurus, Williston, No. 709, 710.
    - Typhis obesus Gabb, Guppy and Dall, No. 255.
    - Ultimus precursor n. sp., Guppy and Dall, No. 255.
    - Vanuxemia Billings, Ulrich, No. 626.
      - abrupta n. sp., Ulrich, No. 626.
      - crassa n. sp., Ulrich, No. 626.
      - decipiens n. sp., Ulrich, No. 626.
      - dixonensis Meek and Worthen, Ulrich, No. 626.
        - var. insueta n. var., Ulrich, No. 626.
      - hayniana Safford, Ulrich, No. 626.
      - media n. sp., Ulrich, No. 626.
      - obtusifrons Ulrich, Ulrich, No. 626.
      - rotundata Hall, Ulrich, No. 626.
      - sardesoni Ulrich, Ulrich, No. 626.
      - suberecta n. sp., Ulrich, No. 626.
      - subrotunda n. sp., Ulrich, No. 626.

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  - *Genera and species described*—Continued.
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      - terminalis Ulrich, Ulrich, No. 626.
      - umbonata n. sp., Ulrich, No. 626.
      - wortheni Ulrich, Ulrich, No. 626.
    - Venus, Woolman, No. 741.
    - Volutilithes lisbonensis n. sp., Aldrich, No. 18.
    - Volvaria (Volvariella) alabamensis n. sp., Aldrich, No. 18.
    - Warthia Waagen, Ulrich and Scofield, No. 628.
    - Whitella Ulrich, Ulrich, No. 626.
      - compressa Ulrich, Ulrich, No. 626.
      - concentrica Ulrich, Ulrich, No. 626.
      - megambona Whitfield, Ulrich, No. 626.
      - obliquata Ulrich, Ulrich, No. 626.
      - præcipta Ulrich, Ulrich, No. 626.
      - quadrangularis Whitfield, Ulrich, No. 626.
      - rugatina n. sp., Ulrich, No. 626.
      - scofieldi Ulrich, Ulrich, No. 626.
      - sterlingensis Meek and Worthen, Ulrich, No. 626.
      - subcarinata n. sp., Ulrich, No. 626.
      - truncata Ulrich, Ulrich, No. 626.
      - ventricosa Hall, Ulrich, No. 626.
    - Xenocrinus S. A. Miller, James, No. 312.
      - penicillus S. A. Miller, James, No. 312.
      - bæri Meek, James, 312.
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      - wanneri n. sp., Walcott, No. 657.
      - (?) washingtonensis n. p., Walcott, No. 657.
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[Bulletin 156.]

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When, in 1882, the Geological Survey was directed by law to make a geologic map of the United States, there was in existence no suitable topographic map to serve as a base for the geologic map. The preparation of such a topographic map was therefore immediately begun. About one-fifth of the area of the country, excluding Alaska, has now been thus mapped. The map is published in atlas sheets. Under the plan adopted the entire area of the country is divided into small quadrangular districts (designated *quadrangles*), bounded by certain meridians and parallels. The unit of survey is also the unit of publication. The separate sheets are sold at 5 cents each when fewer than 100 copies are purchased, but when they are ordered in lots of 100 or more copies, whether of the same sheet or of different sheets, the price is 2 cents each. The mapped areas are widely scattered, nearly every State being represented. More than 900 sheets have been engraved and printed; they are tabulated by States in the Survey's "List of Publications," a pamphlet which may be had on application.

The map sheets represent a great variety of topographic features, and with the aid of descriptive text they can be used to illustrate topographic forms. This has led to the projection of an educational series of topographic folios, for use wherever geography is taught in high schools, academies, and colleges. Of this series the first folio has been issued, viz:

1. Physiographic types, by Henry Gannett, 1898, folio, consisting of the following sheets and 4 pages of descriptive text: Fargo (N. Dak.-Minn.), a region in youth; Charleston (W. Va.), a region in maturity; Caldwell (Kans.), a region in old age; Palmyra (Va.), a rejuvenated region; Mount Shasta (Cal.), a young volcanic mountain; Eagle (Wis.), moraines; Sun Prairie (Wis.), drumlins; Donaldsonville (La.), river flood plains; Boothbay (Me.), a fiord coast; Atlantic City (N. J.), a barrier-beach coast.

GEOLOGIC ATLAS OF THE UNITED STATES.

The Geologic Atlas of the United States is the final form of publication of the topographic and geologic maps. The atlas is issued in parts, or folios, progressively as the surveys are extended, and is designed ultimately to cover the entire country.

Each folio contains topographic, geologic, economic, and structural maps, together with textual descriptions and explanations, and is designated by the name of a principal town or of a prominent natural feature within the district.

Two forms of issue have been adopted, a "library edition" and a "field edition." In both the sheets are bound between heavy paper covers, but the library copies are permanently bound, while the sheets and covers of the field copies are only temporarily wired together.

Under the law a copy of each folio is sent to certain public libraries and educational institutions. The remainder are sold at 25 cents each, except such as contain an unusual amount of matter, which are priced accordingly. Prepayment is obligatory. The folios ready for distribution are listed below.

No.	Name of sheet.	State.	Limiting meridians.	Limiting parallels.	Area, in square miles.	Price, in cents.
1	Livingston	Montana	110°-111°	45°-46°	3,354	25
2	Ringgold	Georgia Tennessee	85°-85° 30′	34° 30′-35°	980	25
3	Placerville	California	120° 30′-121°	38° 30′-39°	932	25
4	Kingston	Tennessee	84° 30′-85°	35° 30′-36°	969	25
5	Sacramento	California	121°-121° 30′	38° 30′-39°	932	25
6	Chattanooga	Tennessee	85°-85° 30′	35°-35° 30′	975	25
7	Pikes Peak *	Colorado	105°-105° 30′	38° 30′-39°	932	25
8	Sewanee	Tennessee	85° 30′-86°	35°-35° 30′	975	25
9	Anthracite-Crested Butte.	Colorado	106° 45′-107° 15′	38° 45′-39°	465	50
10	Harpers Ferry	Virginia West Va. Maryland.	77° 30′-78°	39°-39° 30′	925	25
11	Jackson	California.	120° 30′-121°	38°-38° 30′	938	25
12	Estillville	Virginia Kentucky. Tennessee	82° 30′-83°	36° 30′-37°	957	25
13	Fredericksburg	Maryland. Virginia	77°-77° 30′	38°-38° 30′	938	25
14	Staunton	Virginia West Va.	79°-79° 30′	38°-38° 30′	938	25
15	Lassen Peak	California	121°-122°	40°-41°	3,634	25
16	Knoxville	Tennessee N.Carolina	83° 30′-84°	35° 30′-36°	925	25
17	Marysville	California.	121° 30′-122°	39°-39° 30′	925	25
18	Smartsville	California.	121°-121° 30′	39°-39° 30′	925	25
19	Stevenson	Alabama Georgia Tennessee	85° 30′-86°	34° 30′-35°	980	25
20	Cleveland	Tennessee	84° 30′-85°	35°-35° 30′	975	25
21	Pikeville	Tennessee	85°-85° 30′	35° 30′-36°	969	25
22	McMinnville	Tennessee	85° 30′-86°	35° 30′-36°	969	25
23	Nomini	Maryland. Virginia	76° 30′-77°	38°-38° 30′	938	25
24	Three Forks	Montana	111°-112°	45°-46°	3,354	50

*Out of stock.

No.	Name of sheet.	State.	Limiting meridians.	Limiting parallels.	Area, in square miles.	Price, in cents.
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26	Pocahontas	Virginia West Va.	81°-81° 30'	37°-37° 30'	951	25
27	Morristown	Tennessee	83°-83° 30'	36°-36° 30'	963	25
28	Piedmont	Virginia Maryland West Va.	79°-79° 30'	39°-39° 30'	925	25
29	Nevada City:					
	Nevada City	California	121° 00' 25"-121° 03' 45"	39° 13' 50"-39° 17' 16"	11.65	50
	Grass Valley	California	121° 01' 35"-121° 05' 04"	39° 10' 22"-39° 13' 50"	12.09	
	Banner Hill	California	120° 57' 05"-121° 00' 25"	39° 13' 50"-39° 17' 16"	11.65	
30	Yellowstone National Park: Gallatin Canyon Shoshone Lake	Wyoming	110°-111°	44°-45°	3,412	75
31	Pyramid Peak	California	120°-120° 30'	38° 30'-39°	932	25
32	Franklin	Virginia West Va.	79°-79° 30'	38° 30'-39°	932	25
33	Briceville	Tennessee	84°-84° 30'	36'-36° 30'	963	25
34	Buckhannon	West Va.	80°-80° 30'	38° 30'-39°	932	25
35	Gadsden	Alabama	86°-86° 30'	34°-34° 30'	986	25
36	Pueblo	Colorado	104° 30'-105°	38°-38° 30'	938	50
37	Downieville	California	120° 30'-121°	39° 30'-40°	919	25
38	Butte Special	Montana	112° 29' 30"-112° 36' 42"	45° 59' 28"-46° 02' 54"	22.80	50
39	Truckee	California	120°-120° 30'	39°-39° 30'	925	25
40	Wartburg	Tennessee	84° 30'-85°	36°-36° 30'	963	25
41	Sonora	California	120°-120° 30'	37° 30'-38°	944	25
42	Nueces	Texas	100°-100° 30'	29° 30'-30°	1,035	25
43	Bidwell Bar	California	121°-121° 30'	39° 30'-40°	918	25

STATISTICAL PAPERS.

Mineral Resources of the United States, 1882, by Albert Williams, jr. 1883. 8°. xvii, 813 pp. Price 50 cents.

Mineral Resources of the United States, 1883 and 1884, by Albert Williams, jr. 1885. 8°. xiv, 1016 pp. Price 60 cents.

Mineral Resources of the United States, 1885. Division of Mining Statistics and Technology. 1886. 8°. vii, 576 pp. Price 40 cents.

Mineral Resources of the United States, 1886, by David T. Day. 1887. 8°. viii, 813 pp. Price 50 cents.

Mineral Resources of the United States, 1887, by David T. Day. 1888. 8°. vii, 832 pp. Price 50 cents.

Mineral Resources of the United States, 1888, by David T. Day. 1890. 8°. vii, 652 pp. Price 50 cents.

Mineral Resources of the United States, 1889 and 1890, by David T. Day. 1892. 8°. viii, 671 pp. Price 50 cents.

Mineral Resources of the United States, 1891, by David T. Day. 1893. 8°. vii, 630 pp. Price 50 cents.

Mineral Resources of the United States, 1892, by David T. Day. 1893. 8°. vii, 850 pp. Price 50 cents.

Mineral Resources of the United States, 1893, by David T. Day. 1894. 8°. viii, 810 pp. Price 50 cents.

On March 2, 1895, the following provision was included in an act of Congress:

"*Provided*, That hereafter the report of the mineral resources of the United States shall be issued as a part of the report of the Director of the Geological Survey."

In compliance with this legislation the following reports have been published:

Mineral Resources of the United States, 1894, David T. Day, Chief of Division. 1895. 8°. xv, 646 pp., 23 pl.; xix, 735 pp., 6 pl. Being Parts III and IV of the Sixteenth Annual Report.

Mineral Resources of the United States, 1895, David T. Day, Chief of Division. 1896. 8°. xxiii, 542 pp., 8 pl. and maps; iii, 543-1058 pp., 9-13 pl. Being Part III (in 2 vols.) of the Seventeenth Annual Report.

Mineral Resources of the United States, 1896, David T. Day, Chief of Division. 1897. 8°. xii, 642 pp., 1 pl.; 643-1400 pp. Being Part V (in 2 vols.) of the Eighteenth Annual Report.

The report on the mineral resources for the calendar year 1897 will form a part of the Nineteenth Annual Report of the Survey.

The money received from the sale of the Survey publications is deposited in the Treasury, and the Secretary of the Treasury declines to receive bank checks, drafts, or postage stamps; all remittances, therefore, must be by MONEY ORDER, made payable to the Director of the United States Geological Survey, or in CURRENCY—the exact amount. Correspondence relating to the publications of the Survey should be addressed to—

THE DIRECTOR,
UNITED STATES GEOLOGICAL SURVEY,
WASHINGTON, D. C.

WASHINGTON, D. C., *September, 1898.*

[Take this leaf out and paste the separated titles upon three of your catalogue cards. The first and second titles need no addition; over the third write that subject under which you would place the book in your library.]

LIBRARY CATALOGUE SLIPS.

Series.

United States. *Department of the interior.* (*U. S. geological survey.*)
Department of the interior | — | Bulletin | of the | United States | geological survey | no. 156 | [Seal of the department] | Washington | government printing office | 1898
Second title: United States geological survey | Charles D. Walcott, director | — | Bibliography and index | of | North American geology, paleontology, | petrology, and mineralogy | for | the year 1897 | by | Fred Boughton Weeks | [Vignette] | Washington | government printing office | 1898
8°. 130 pp.

Author.

Weeks (Fred Boughton).
United States geological survey | Charles D. Walcott, director | — | Bibliography and index | of | North American geology, paleontology, | petrology, and mineralogy | for | the year 1897 | by | Fred Boughton Weeks | [Vignette] | Washington | government printing office | 1898
8°. 130 pp.
[United States. *Department of the interior.* (*U. S. geological survey.*) Bulletin 156.]

Subject.

United States geological survey | Charles D. Walcott, director | — | Bibliography and index | of | North American geology, paleontology, | petrology, and mineralogy | for | the year 1897 | by | Fred Boughton Weeks | [Vignette] | Washington | government printing office | 1898
8°. 130 pp.
[United States. *Department of the interior.* (*U. S. geological survey.*) Bulletin 156.]

DEPARTMENT OF THE INTERIOR

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BULLETIN

OF THE

UNITED STATES

GEOLOGICAL SURVEY

No. 162

BIBLIOGRAPHY AND INDEX OF NORTH AMERICAN
GEOLOGY, PALEONTOLOGY, PETROLOGY, AND
MINERALOGY FOR 1898.—WEEKS

WASHINGTON
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1899

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CHARLES D. WALCOTT, DIRECTOR

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FOR

THE YEAR 1898

BY

FRED BOUGHTON WEEKS

WASHINGTON
GOVERNMENT PRINTING OFFICE
1899

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LETTER OF TRANSMITTAL.

Department of the Interior,
United States Geological Survey.
Washington, D. C., June 30, 1899.

Sir: I have the honor to transmit herewith the manuscript of a Bibliography and Index of North American Geology, Paleontology, Petrology, and Mineralogy for the Year 1898, and to request that it be published as a bulletin of the Survey.

Very respectfully,

F. B. Weeks.

Hon. Charles D. Walcott,
Director United States Geological Survey.

BIBLIOGRAPHY AND INDEX OF NORTH AMERICAN GEOLOGY, PALEONTOLOGY, PETROLOGY, AND MINERALOGY FOR THE YEAR 1898.

By Fred Boughton Weeks.

INTRODUCTION.

The method of preparing and arranging the material of the Bibliography and Index for 1898 is similar to that adopted for the previous publications on this subject (Bulletins Nos. 130, 135, 146, 149, and 156). Several papers that should have been entered in the previous bulletins are here recorded, and the date of publication is given with each entry.

Bibliography.—The bibliography consists of full titles of separate papers, classified by authors, an abbreviated reference to the publication in which the paper is printed, and a brief summary of the contents, each paper being numbered for index reference. The extent of papers less than a single page in length is indicated as $\frac{1}{8}$ p., 5 l. (lines).

Index.—The subject headings, their subdivision and arrangement, are shown in the Classified Key to the Index. They comprise geographic, geologic, mineralogic, paleontologic, and petrologic subdivisions. Under Economic Geology is given a list of the useful minerals and ores described in publications examined; under Mineralogy, a list of minerals described in such publications; under Paleontology, a list of genera and species of fossils therein described, and under Petrology, a list of rocks described, reference being made in each case, by author's name and number of article in the Bibliography, to the paper in which the fossil, mineral, or rock is described.

The Index has been added to by a list of chemical analyses of rocks and minerals and a list of names of geologic formations described in the publications examined.

LIST OF PUBLICATIONS EXAMINED.

Alabama Industrial and Scientific Society: Proceedings, Vol. VIII, 1898. Tuscaloosa, Ala.

American Academy of Arts and Sciences: Proceedings, Vol. XXXIII, Nos. 8–27; Vol. XXXIV, Nos. 1–7, 1898. Boston, Mass.

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American Journal of Science, 4th ser., Vols. V–VI, 1898. New Haven, Conn.

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American Philosophical Society: Proceedings, Vol. XXXVI, Nos. 157–158, 1898. Philadelphia, Pa.

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Augustana Library Publications, No. 1, 1898. Rock Island, Ill.

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British Association for the Advancement of Science: Report 1897, 1898. London, England.

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Inst. Geol. de Mexico, Bull. No. 11, 157 pp., 1898.

12 **Aldrich** (T. H.). Some new Eocene fossils from Alabama.
The Nautilus, vol. xi, pp. 97-98, 1898.

13 **Ami** (Henry M.). Note on the physiography and geology of Kings County, Nova Scotia.
Ottawa Nat., vol. xii, pp. 149-150, 1898.
Gives brief notes on the geology of the county.

14 —— The mastodon in western Ontario.
Abstract, Science, new ser., vol. vii, p. 80 (½ p.), 1898.

15 **Andrews** (O. I.). The volcanic rock of Alum Hill, Boulder County [Colorado].
Colo. Sci. Soc., Proc., vol. v, pp. 148-155, 1898.
Describes the megascopic, microscopic, and chemical characters of two varieties of eruptive rock.

16 **Ashley** (George H.). Note on an area of compressed structure in western Indiana.
Geol. Soc. Am., Bull., vol. ix, pp. 429-430, 4 figs., 1898; Abstracts, Jour. of Geol., vol. vi, pp. 118-119; Science, new ser., vol. vii, p. 84 (9 l.), 1898.
Describes occurrence in the Indiana coal field.

17 —— Note on fault structure in Indiana.
Ind. Acad. Sci., Proc. 1897, pp. 244-250, pls. i-ii, 1898.
Describes faults in the Coal Measures of Indiana.

18 —— **Blatchley** (W. S.) and. Geological scale of Indiana.
See Blatchley (W. S.) and Ashley (G. H.), No. 92.

19 **Austin** (W. L.). Copper deposits of Mora County, New Mexico.
Abstract, Eng. and Mg. Jour., vol. lxv, p. 370 (½ p.), 1898.
Describes the occurrence and origin of the deposits.

20 **Austin** (W. L.). Boundary and Trail Creek [British Columbia].
Mines and Minerals, vol. xviii, pp. 268–272, 1898.
Describes the geologic and geographic features of the region and the occurrence of gold and silver ores.

21 —— Nickel deposits near Riddles, Oregon.
Mines and Minerals, vol. xix, p. 226, 1 fig., 1898.
Describes occurrence of nickel at this locality.

22 —— The nickel deposits near Riddles, Oregon.
Colo. Sci. Soc., Proc., vol. v, pp. 173–196, 1 pl., 9 figs., 1898.
See Bibliography and Index for 1896, No. 18.

23 —— [Telluride veins in the La Plata Mountains [Colorado].
Colo. Sci. Soc., Bull. No. 10, pp. 4–5, 1898.
Describes occurrence and character of the veins.

B.

24 **Bagg** (Rufus Mather, jr.). The occurrence of Cretaceous fossils in the Eocene of Maryland.
Am. Geol., vol. xxii, pp. 370–375, 1898.
Describes the occurrence and succession of the strata. Discusses the probable migration of the species mentioned.

25 —— The Tertiary and Pleistocene foraminifera of the middle Atlantic slope.
Am. Pal., Bull., vol. ii, No. 10, 68 pp., 3 pls., 1898.
Includes a description of the lithologic character of the formations, a bibliography and description of the fossil foraminifera.

26 —— [Foraminiferal deposits near Bujio and on the Empire limestone, Isthmus of Panama.]
Harvard Coll., Mus. Comp. Zool., Bull., vol. xxviii, No. 5, p. 275 (½ p.), 1898.
Names the species identified from collections from these formations.

27 —— The Cretaceous foraminifera of New Jersey.
U. S. Geol. Surv., Bull. No. 88, pp. 1–89, pls. i–vi, 1898.
Gives a historical review of the literature on Cretaceous foraminifera, a partial bibliography and description and geologic distribution of the species found in the Cretaceous of New Jersey.

28 —— See **Clark** (W. B.), No. 152.

29 **Bailey** (L. W.). Triassic (?) rocks of Digby Basin [Nova Scotia].
N. S. Inst. Sci., Proc. and Trans., vol. ix, pt. 4, pp. 356–360, 1898.
Discusses the age of the rocks of the region.

30 —— Report on the geology of southwest Nova Scotia, embracing the counties of Queens, Shelburne, Yarmouth, Digby, and part of Annapolis.
Canada Geol. Surv., new ser., vol. ix, Rept. M, 154 pp., 5 pls., 1898.
Describes the physiographic features, glacial phenomena, character and occurrence of Cambrian, Silurian, and Devonian rocks, and the occurrence of economic materials.

31 **Bailey** (L. W.) The Bay of Fundy trough in American geological history.

Can. Roy. Soc., Proc. and Trans., 2d ser., vol. iii, sect. iv., pp. 107-116, 1898.

Discusses the geologic history of the region.

32 —— Some typical sections in southwestern Nova Scotia.

Brit. Assoc. Adv. Sci., Rept. 1897, p. 640 (½ p.), 1898.

Contains brief notes on the stratigraphy and structure of the region.

33 **Bain** (Harry Foster). Geology of Polk County [Iowa].

Iowa Geol. Surv., vol. vii, pp. 265-412, pls. vii-ix, figs. 38-66, with geologic map, 1897.

Describes the physiography, the occurrence, and character of the Carboniferous and Pleistocene strata, and the occurrence of coal, clay, and road materials.

34 —— Geology of Guthrie County [Iowa].

Iowa Geol. Surv., vol. vii, pp. 415-487, figs. 67-71, with geologic map, 1897.

Describes the physiographic features, the occurrence, and character of the Carboniferous, Cretaceous, and Pleistocene formations, and the occurrence of coal and clays.

35 —— Preliminary outline map of the drift sheets of Iowa.

Iowa Geol. Surv., vol. viii, pl. iii, 1898.

36 —— Geology of Decatur County [Iowa].

Iowa Geol. Surv., vol. viii, pp. 258-309, pls. xxi-xxiv, figs. 9-10, with geologic map, 1898.

Describes the physiographic features, the occurrence, and character of the Carboniferous and Pleistocene formations, and the occurrence of coal, clay, and building stone.

37 —— Geology of Plymouth County [Iowa].

Iowa Geol. Surv., vol. viii, pp. 318-366, pls. xxv-xxix, fig. 13, with geologic map, 1898.

Describes the physiographic and stratigraphic features, the occurrence, and character of the Cretaceous and Pleistocene formations, and the occurrence of clay, cement, and coal.

38 —— Properties and tests of Iowa building stones.

Iowa Geol. Surv., vol. viii, pp. 370-416, pls. xxx-xxxii, 1898.

Describes the essential properties of building stones and the character of some material from Iowa.

39 —— The Bethany limestone, at Bethany, Missouri.

Am. Jour. Sci., 4th ser., vol. v, pp. 433-439, 1898.

Describes the character and occurrence of the series at the locality and in Iowa. Gives lists of fossils determined and the author's classification.

40 —— The Aftonian and pre-Kansan deposits in southwestern Iowa.

Iowa Acad. Sci., Proc., vol. v, pp. 86-101, pls. v-vii; Abstract, Am. Geol., vol. xxi, pp. 255-262, 1898.

Describes the evidence of two drift sheets and its bearing on the evidence of a pre-Kansan drift.

41 **Bain** (Harry Foster). [Review of "Geologic Atlas of the United States, Folio No. 42. Bidwell Bar folio, California," by H. W. Turner.]

Jour of Geol., vol. vi, pp. 542–544, 1898.

42 —— [Review of "Clay deposits and clay industry in North Carolina," by Heinrich Ries.]

Jour. of Geol., vol. vi, pp. 545–547, 1898.

43 —— [Review of "Bibliography and index of North American geology, paleontology, petrology, and mineralogy for 1896," by F. B. Weeks, and "Bibliografía geológica y minera de la República Mexicana," by R. Aguilar y Santillan.]

Jour. of Geol., vol. vi, pp. 763–764, 1898.

44 —— The Bonanza Arkansas coal mines.

Eng. and Mg. Jour., vol. lxvi, pp. 579–580, 1898.

Describes the occurrence and chemical character of the coal in Sebastian County, Arkansas.

45 —— and **Leonard** (A. G.). The Middle Coal Measures of the western interior coal fields.

Jour. of Geol., vol. vi, pp. 577–588, 1898; Abstracts, Am. Geol., vol. xxii, p. 251 (½ p.); Science, new ser., vol. vii, p. 464 (½ p.), 1898.

Describes the conditions under which the Des Moines and Missourian series were laid down, gives a section of the beds in central Iowa, and discusses the classification and correlation of portions of the Coal Measures.

46 **Ball** (T. H.). The Lake Michigan and Mississippi Valley watershed.

Ind. Acad. Sci., Proc., 1896, pp. 72–73, 1897.

Traces the course of the watershed in northern Indiana.

47 —— Some notice of streams, wells, and sand ridges in Lake County, Indiana.

Ind. Acad. Sci., Proc., 1896, pp. 73–75, 1897.

Describes certain physical features of the region.

48 **Ballou** (William H.). The serpentlike sea saurians.

Pop. Sci., Mo., vol. liii, pp. 209–225, 8 figs., 1898.

Describes the distribution and gives illustrations of saurians of recent and geologic time.

49 **Barbour** (Erwin Hinckley). Notes on the ash beds of Nebraska and the Great Plains.

The Mineral Industry for 1897, pp. 22–25, 5 figs., 1898.

Describes the character and occurrence of the volcanic ash beds.

50 **Barlow** (A. E.) and **Ferrier** (W. F.). On the relations and structure of certain granites and associated arkoses of Lake Temiscaming, Canada.

Brit. Assoc. Adv. Sci. Rept. 1897, pp. 659–660, 1898.

Describes the microscopic characters and relations of the rocks.

51 **Barrell** (R. W.). Gold mining in Oregon.

Mines and Minerals, vol. xix, pp. 12–15, 5 figs., 1898.

Describes the topographic features of eastern Oregon and the occurrence of gold.

52 **Bascom** (Florence). [Review of "Maryland Geological Survey, vol. i, 1897."]

Am. Geol., vol. xxii, pp. 375–377, 1898.

53 —— See **Diller** (J. S.), No. 234.

54 **Bather** (F. A.). Wachsmuth and Springer's classification of crinoids.

Nat. Sci., vol. xii, pp. 337–345, 1898.

55 **Bayley** (W. S.). See **Diller** (J. S.), No. 234.

56 **Becker** (George F.). Reconnaissance of the gold fields of southern Alaska, with some notes on general geology.

U. S. Geol. Surv., 18th Ann. Rept., Pt. III, pp. 7–86, pls. i–xxxi, figs. 1–6, 1898.

Includes notes on some igneous rocks and on the glacial features and volcanic phenomena of the region. Describes the occurrence and character of the auriferous deposits and veins.

57 —— The Witwatersrand banket, with notes on other gold-bearing pudding stones.

U. S. Geol. Surv., 18th Ann. Rept., Pt. V, pp. 153–184, 1 fig.; Review Zeit. für prak. Geol., Heft 6, pp. 212–217, 1898.

Includes notes on auriferous conglomerates occurring in the United States.

58 —— Auriferous conglomerates of the Transvaal.

Am. Jour. Sci., 4th ser., vol. v, pp. 193–208, 1898.

In describing the character of the conglomerates and the origin of gold, refers to the river gravels and beach sands of California.

59 —— On the determination of plagioclase feldspars in rock sections.

Am. Jour. Sci., 4th ser., vol. v, pp. 349–354, pl. iii, 1898.

Reviews Michel-Levy's method of determining plagioclase feldspars.

60 **Beecher** (Charles E.). Origin and significance of spines. A study in evolution.

Am. Jour. Sci., 4th ser., vol. vi, pp. 1–20, pl. i, figs. 1–31; 125–136; 249–268, figs. 32–50; 329–359, figs. 51–73, 1898.

Discusses the origin, growth, development, and significance of spines. Includes a bibliography of the subject.

61 **Beede** (J. W.). New corals from the Kansas Carboniferous.

Kan. Univ. Quart., vol. vii, pp. 16–18, 1898.

Describes four new species.

62 —— Variations of external appearance and internal characters of Spirifer cameratus Morton.

Kan. Univ. Quart., vol. vii, pp. 103–105, pl. vi, fig. 1–3, 1898.

63 **Beede** (J. W.). Notes on Campophyllum torquium Owen, and a new variety of Monopteria gibbosa Meek and Worthen.

Kan. Univ. Quart., vol. vii, pp. 187–190, 5 figs., 1898.

64 —— Preliminary notice on the correlation of the Meek and Marcou section at Nebraska City, Nebraska, with Kansas Coal Measures.

Kan. Univ. Quart., vol. vii, pp. 231–233, 1898.

Discusses the evidence for the correlation of the Nebraska City beds with Coal Measures at Topeka, Kansas.

65 —— The stratigraphy of Shawnee County [Kansas].

Kan. Acad. Sci., Trans., vol. xv, pp. 27–34, 1898.

Names and describes a number of subdivisions of the Coal Measures. Gives a list of fossils collected.

66 —— The McPherson Equus beds.

Kan. Acad. Sci., Trans., vol. xv, pp. 104–110, pl. vi, and map and sections, 1898.

Describes the topography of a part of central Kansas and the character, occurrence, and origin of the Equus beds.

67 —— Notes on Kansas physiography.

Kan. Acad. Sci., Trans., vol. xv, pp. 114–120, pls. vii–ix, 1898.

Describes the physiographic features as determined by the geologic structure, rocks, and climate.

68 **Bell** (Robert). Report on the geology of the French River sheet, Ontario.

Canada Geol. Surv., new ser., vol. ix, Rept. I, 29 pp., 1898.

Describes the occurrence and character of the granite, Laurentian, Huronian, and Silurian rocks and glacial phenomena.

69 —— On the occurrence of mammoth and mastodon remains around Hudson Bay.

Geol. Soc. Am., Bull., vol. ix, pp. 369–390, 1 fig., 1898.

Describes the occurrence, migration, disappearance of the mammoth and mastodon, the character of the Pleistocene deposits southwest of James Bay, and the discovery of mastodon bones in other parts of Canada.

70 —— Fossil-like forms in the Sault Ste. Marie sandstone.

Abstract, Science, new ser., vol. vii, p. 80 (12 l.), 1898.

71 **Benedict** (A. C.). The Bayport, Michigan, quarries.

Stone, vol. xvii, pp. 153–164, 5 pls., 1898.

Describes the character and occurrence of the St. Louis limestone at the locality, and its value as a building stone and for road material.

72 **Bennett** (L. F.). Four comparative cross sections of the Knobstone group of Indiana.

Ind. Acad. Sci., Proc. 1897, pp. 258–262, 1898.

Describes the character of the formation and compares the sections as drawn.

73 **Berkey** (Charles P.). Geology of the St. Croix Dalles. II [Wisconsin].

Am. Geol., vol. xxi, pp. 139-155, pls. xii-xiii, 1898.

Describes the igneous rocks and minerals and presents a geologic map of the region.

74 —— Geology of the St. Croix Dalles. III, Paleontology.

Am. Geol., vol. xxi, pp. 270-294, pls. xvii-xxi, 1898.

Gives lists of fossils collected from the different beds and describes a number of new species. Includes a geologic map.

75 **Bernard** (Felix). The principles of paleontology (extracted from Bernard's Eléments de Paléontologie, Paris, 1895).

N. Y., 14th Ann. Rept. State Geologist, pp. 131-215, 1897; N. Y. State Mus., 48th Ann. Rept., vol. ii, pp. 131-215, 1897.

76 **Beyer** (Samuel Walker). Geology of Marshall County [Iowa].

Iowa Geol. Surv., vol. vii, pp. 199-262, pls. v-vi, figs. 25-37, with geologic map, 1897.

Describes the physiographic and drainage features, the occurrence and character of the Carboniferous subdivisions, and the occurrence of building stones and clay.

77 **Bibbins** (Arthur). A fossil cypress swamp in Maryland.

The Plant World, vol. i, pp. 164-166, 1 pl., 1898.

Describes occurrence on Chesapeake Bay in Cretaceous strata.

78 **Birkinbine** (John). Iron ores.

U. S. Geol. Surv., 19th Ann. Rept., pt. vi, pp. 23-63, pls. i-xi, 1898.

Includes statistics of production, analyses of iron ores, notes on the Marquette iron range, by James E. Jopling, and notes on the iron ores of Alabama, by Henry McCalley.

79 —— Manganese ores.

U. S. Geol. Surv., 19th Ann. Rept., pt. vi, pp. 91-125, 1898.

Includes statistics of production and notes on the manganese ores of Virginia, by Charles Catlett.

80 **Bishop** (Irving P.). The structural and economic geology of Erie County [New York].

N. Y., 15th Ann. Rept. State Geologist, vol. i, pp. 17-18, 305-392, pls. i-xvi, figs. 1-6, 1897; N. Y. State Mus., 49th Ann. Rept., vol. ii, pp. 305-392, pls. i-xvi, figs. 1-6, 1898.

Describes the physiography, the character, and occurrence of the Silurian and Devonian subdivisions, the glacial phenomena, and the occurrence of building stones and natural gas, with data of the well borings.

81 **Blake** (William P.). Oscillations of level of the Pacific coast of the United States.

Am. Geol., vol. xxi, pp. 164-165, 1898.

Describes occurrence of Ocoya Creek formation and its bearing on the evidence of a recent uplift of the region.

82 —— Anthracite coal in Arizona.

Am. Geol., vol. xxi, pp. 345-346, 1898.

Describes occurrence of coal in beds of Carboniferous age and gives a chemical analysis.

83 **Blake** (William P.). Remains of a species of bos in the Quarternary of Arizona.

Am. Geol., vol. xxii, pp. 65–72, 1898.

Describes horn cores and reviews the literature describing similar material.

84 —— Bison latifrons and Bos arizonica.

Am. Geol., vol. xxii, pp. 247–248, 1898.

Refers to remains recently described by Dr. Allen.

85 —— Native sodium carbonate.

Eng. and Mg. Jour., vol. lxv, p. 188 (½ p.), 1898.

Describes occurrence of soda in northern Mexico.

86 —— Wolframite in Arizona.

Eng. and Mg. Jour., vol. lxv., p. 608 (½ p.), 1898.

Contains brief notes on occurrence in Cochise County.

87 **Blandy** (John F.). Mining in Yavapai County, Arizona.

Eng. and Mg. Jour., vol. lxvi, pp. 547–548, 1898.

Describes the general geology of the region and the occurrence of precious metals.

88 **Blatchley** (W. S.). The geology of Lake and Porter counties, Indiana.

Ind. Dept. of Geol. and Nat. Res., 22d Ann. Rept., pp. 25–104, pls. iii–viii, 1898.

Describes the physiography, the Devonian and Silurian rocks, and the glacial and recent geologic features of the region. Gives sections of artesian wells.

89 —— The clays and clay industries of northwestern Indiana.

Ind. Dept. of Geol. and Nat. Res., 22d Ann. Rept., pp. 105–153, pls. ix–xi, 1898.

Describes the character, origin, varieties and properties of clays and the clays and clay industries of the region.

90 —— The petroleum industry in Indiana in 1897.

Ind. Dept. of Geol. and Nat. Res., 22d Ann. Rept., pp. 155–184, pls. xii–xiii, 1 fig., 1898.

Describes the mode of formation of oil in the Trenton limestone in Indiana.

91 —— See **Oliphant** (F. H.), No. 580.

92 —— and **Ashley** (George H.). Geological scale of Indiana.

Ind. Dept. of Geol. and Nat. Res., 22d Ann. Rept., pp. 17–23, pl. ii, 1898.

Gives a brief description of each of the formations occurring in the State.

93 **Boss** (C. M.). Some dike features of the Gogebic iron range [Michigan-Wisconsin].

Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 556–563, 1898.

Gives local details regarding the dikes of the region.

94 **Bownocker** (J. A.). The paleontology and stratigraphy of the Corniferous rocks of Ohio.

Dennison Univ., Sci. Lab., Bull., vol. xi, art. ii, pp. 12–40, pls. ii–viii, 1898.

Describes the stratigraphy and gives lists of fossils found at various localities.

95 **Boyer** (Charles S.). See **Woolman** (L.), No. 934.

96 **Branner** (John C.). The cement materials of southwest Arkansas.

Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 42–63, figs. 1–6, 1898.

Describes the occurrence of the chalk beds and gives chemical analyses of the material.

97 —— On the origin of novaculites and related rocks.

Jour. of Geol., vol. vi, pp. 368–371, 1898.

Gives a summary of the views of various authors as to the origin of these rocks, with a brief statement of the writer's conclusions.

98 —— Geology and its relations to topography.

Am. Soc. Civil Engrs., Trans., vol. xxxix, pp. 53–78, 94–95, 16 figs., 1898.

Describes the internal changes which rocks undergo, the character and mode of operation of the destructive agencies, and the resulting topographic forms.

99 **Brewer** (William M.). Harrison Lake, British Columbia.

Eng. and Mg. Jour., vol. lxv, p. 640 (½ p.), 1898.

Contains brief notes on the occurrence of gold and copper in the region.

100 —— The Sandon district, British Columbia.

Eng. and Mg. Jour., vol. lxv, pp. 731–732, 2 figs., 1898.

Describes the occurrence of the silver-lead ores of the region.

101 —— Rossland, British Columbia.

Eng. and Mg. Jour., vol. lxvi, pp. 40–41, 1 fig., 1898.

Includes brief notes on the geologic occurrence of the ore bodies.

102 —— Prospecting on the upper Lillooet, British Columbia.

Eng. and Mg. Jour., vol. lxvi, pp. 62–63, 185, 1898.

Includes notes on the general geology of the region.

103 —— Pemberton meadows and the Blackwater, British Columbia.

Eng. and Mg. Jour., vol. lxvi, p. 281, 1898.

Describes the general geologic features of the region.

104 —— Lillooet River and the Squamish trail, British Columbia.

Eng. and Mg. Jour., vol. lxvi, p. 515, 1 fig., 1898.

Gives notes on the general geology of the region and the occurrence of gold.

105 **Brigham** (Albert Perry). Topography and glacial deposits of Mohawk Valley [New York].

Geol. Soc. Am., Bull., vol. ix, pp. 183–210, pl. xv, figs. 1–2; Abstracts, Jour. of Geol., vol. vi, pp. 211–212; Science, new ser., vol. viii, p. 50 (½ p.), 1898.

Describes the pre-Glacial drainage and drift deposits of the region.

106 **Brigham** (Albert Perry). Note on trellised drainage in the Adirondacks.

Am. Geol., vol. xxi, pp 219–222, pl. xv, 1898.

Discusses the drainage of a portion of the Adirondack region.

107 **Broadhead** (Garland C.). Geology of Boone County [Missouri].

Mo. Geol. Surv., vol. xii, Pt. III, pp. 375–388, pls. xii–xiii, 1898.

Describes the physiographic features, the character and occurrence of the Ozark series, Osage series, and Keokuk group, and includes a geologic map of the area.

108 —— The Ozark uplift and growth of the Missouri Paleozoic.

Mo. Geol. Surv., vol xii, Pt. III, pp. 391–409, 1898.

Describes the general character of the Ozark uplift and the geologic history of the region.

109 —— Maj. Frederick Hawn.

Am. Geol., vol. xxi, pp. 267–269, pl. xvi, 1898.

Gives a sketch of his life and a list of published papers.

110 **Brooks** (Alfred H.), **Wolff** (J. E.) and. The age of the Franklin white limestone of Sussex County, New Jersey.

See Wolff (J. E.) and Brooks (A. H.), No. 931.

111 **Brown** (Lucius P.). The phosphate-rock deposits of Tennessee during 1897.

U. S. Geol. Surv., 19th Ann. Rept., Pt. VI (Continued), pp. 547–555, 1898.

Describes the character and origin of the Tennessee phosphate deposits.

112 **Brown** (R. G.). A mineralized dike [Mexico].

School of Mines Quart., vol. xix, pp. 90–93, 4 figs., 1897.

Describes the occurrence of the dike rock and its mineralization.

113 **Browne** (Ross E.). The mother lode of California.

Mg. and Sci. Press, vol. lxxvi, pp. 105–106, 5 figs., 1898.

Describes the characteristic features of the mother lode and the occurrence of gold.

114 **Brush** (George J.). Manual of determinative mineralogy, with an introduction on blowpipe analysis. Revised and enlarged, with entirely new tables for the identification of minerals, by Samuel L. Penfield.

John Wiley & Sons, New York, 15th edition, 1898.

Review by J. P. Iddings, Jour. of Geol., vol. vi, pp. 757–758, 1898.

115 **Bryson** (John). Drift formations of Long Island [New York].

Am. Geol., vol. xxii, pp. 245–247, 1898.

Describes certain features of the terminal moraine.

116 **Butts** (Edward). Description of some new species of crinoids from the Upper Coal Measures of the Carboniferous age at Kansas City, Missouri.

Kansas City Acad. Sci., Trans., vol. i, pp. 13–15, 1 pl., 1898.

Describes two new species.

C.

117 **Cabrera** (Raimundo). Mineral resources of Cuba. Translated from the Spanish, by Louis Edward Levy.

Franklin Inst., Jour., cxlvi, pp. 26–41; Abstracts, Eng. and Mg. Jour., vol. lxvi, pp. 308–309; Mines and Minerals, vol. xix, pp. 158–159, 1898.

Describes occurrence of asphaltum, copper, iron, manganese, and gold.

118 **Call** (R. Ellsworth). The hydrographic basins of Indiana and their molluscan fauna.

Ind. Acad. Sci., Proc. 1896, pp. 247–257, with map, 1897.

Describes the drainage systems of Indiana.

119 **Calvin** (Samuel). Fifth Annual Report of the State Geologist [Iowa].

Iowa Geol. Surv., vol. vii, pp. 11–27, pl. i, 1897.

Gives a review of the work of the members of the survey and includes a geologic map of the State.

120 —— Geology of Johnson County [Iowa].

Iowa Geol. Surv., vol. vii, pp. 35–104, pl. iii, figs. 1–9, with geologic map, 1897.

Describes the physiography, drainage systems, the character and occurrence of the Silurian, Devonian, Carboniferous, and Pleistocene formations, and the occurrence of building stones.

121 —— Geology of Cerro Gordo County [Iowa].

Iowa Geol. Surv., vol. vii, pp. 119–195, figs. 10–24, with geologic map, 1897.

Describes the physiographic and drainage features, the occurrence and character of the Devonian, Carboniferous, and Pleistocene formations, and the occurrence of building stones and clays.

122 —— Sixth Annual Report of the State Geologist [Iowa].

Iowa Geol. Surv., vol. viii, pp. 11–23, pl. ii, 1898.

Gives a sketch of the geologic work of the survey during 1897 and a geologic map of the State.

123 —— Geology of Delaware County [Iowa].

Iowa Geol. Surv., vol. viii, pp. 121–192, pls. vii–xiii, with geologic map, 1898.

Describes the physiography, the occurrence and character of the Ordovician, Silurian, Devonian, Cretaceous, and Pleistocene formations, and the occurrence of building stones, clay, and road material.

124 —— Geology of Buchanan County [Iowa].

Iowa Geol. Surv., vol. viii, pp. 203–253, pls. xiv–xx, with geologic map, 1898.

Describes the physiographic features and the occurrence and character of the Silurian, Devonian, and Pleistocene formations, and the occurrence of building stones.

125 —— [Contribution to "A symposium of the classification and nomenclature of geologic time divisions"].

Jour. of Geol., vol. vi, pp. 352–355, 1898.

126 **Calvin** (Samuel). The interglacial deposits of northeastern Iowa.

Iowa Acad. Sci., Proc., vol. v, pp. 64–70; Abstract, Am. Geol., vol. xxi, pp. 251–254, 1898.

Reviews the literature on the subject and describes the character and occurrence of the Buchanan gravels.

127 **Campbell** (Marius R.). Tazewell folio, Virginia-West Virginia.

U. S. Geol. Surv., Geol. Atlas of the U. S., Folio No. 44, 1898.

Describes the physiography of the Appalachian province and of the Tazewell quadrangle, the geologic structure of the region, the occurrence and character of Cambrian, Ordovician, Silurian, Devonian, and Carboniferous rocks, and the occurrence and chemical character of the coal. Includes topographic and geologic maps and columnar section.

128 —— Richmond folio, Kentucky.

U. S. Geol. Surv., Geol. Atlas of the U. S., folio No. 46, 1898.

Describes the physiographic features of the Ohio basin and Richmond quadrangle, the geologic history and structure, and the character and occurrence of Silurian, Devonian, Carboniferous, and Tertiary formations. Includes topographic and geologic maps and structure sections.

129 —— London folio, Kentucky.

U. S. Geol. Surv., Geol. Atlas of U. S., folio No. 47, 1898.

Describes the physiographic features, geologic history, character and occurrence of the Siluro-Devonian, Devonian, and Carboniferous rocks, the structural relations and the occurrence of coal. Accompanied by topographic and geologic maps and columnar sections.

130 —— Earthquake shocks in Giles County, Virginia.

Science, new ser., vol. vii, pp. 233–235, with sketch map, 1898.

Describes the results of investigations of the earthquake shocks in May, 1897.

131 **Canby** (H. S.). See Parker (E. W.) No. 599.

132 **Carlyle** (William A.). [Mining operations for gold, coal, etc., in the Province of British Columbia.]

Brit. Col., Ann. Rep. of the Minister of Mines for 1897, pp. 453–640, 16 pls., 1898.

Includes account of the mining operations and quotations from descriptions of the geologic features previously published by members of the Canadian Geological Survey.

133 **Case** (E. C.). The development and geological relations of the vertebrates. Part I. The fishes.

Jour. of Geol., vol. vi, pp. 393–416, 3 figs., 1898.

Describes the classification and general changes in the anatomy of fishes resulting in the modern type, and a brief summary of the characters of different forms.

134 —— The development and geological relations of the vertebrates. II. Amphibia.

Jour. of Geol., vol. vi, pp. 500–523, 5 figs., 1898.

Discusses the origin and structure of the Amphibia and describes the general characters of various groups.

135 **Case** (E. C.). The development and geological relations of the vertebrates III. Reptilia.
Jour. of Geol., vol. vi, pp. 517-523, 622-646, 711-735, 1898.
Describes the general characters of the various forms.

136 —— The development and geological relations of the vertebrates. IV. Aves. V. Mammalia.
Jour. of Geol., vol. vi, pp. 816-839, 1898.

137 —— Toxochelys.
Kan. Univ. Geol. Surv., vol. iv, pp. 370-385, pls. lxxix-lxxxiv, 1898.
Describes several species, including a new one.

138 —— The significance of certain changes in the temporal region of the primitive Reptilia.
Am. Nat., vol. xxxii, pp. 69-74, 2 figs., 1898.

139 **Catlett** (Charles). See Birkinbine (John), No. 79.

140 **Chalmers** (Robert). The preglacial decay of rocks in eastern Canada.
Brit. Assoc. Adv. Sci., Rept. 1897, pp. 655-656, 1898.
Describes beds of decayed rock beneath the glacial covering.

141 —— The preglacial decay of rocks in eastern Canada.
Am. Jour. Sci., 4th ser., vol. v, pp. 273-282, 1898.
Describes the physiographic features of the region, the distribution of the decayed rock materials, and the causes of the decomposition of the rocks.

142 —— The gold-bearing deposits of the eastern townships of Quebec.
Federated Can. Mg. Inst., Jour., vol. ii, pp. 13-27, 1897.
Describes the occurrence and origin of the gold deposits of the region.

143 **Chamberlin** (T. C.). [Review of "Revised text-book of geology," by James D. Dana. Edited by William North Rice.]
Jour. of Geol., vol. vi, pp. 435-436, 1898.

144 —— [Review of "Northward over the great ice. A narrative of life and work along the shores and upon the interior ice cap of northern Greenland in the years 1886 and 1891-1897," by Robert E. Peary.]
Jour. of Geol., vol. vi, pp. 438-441, 1898.

145 —— The ulterior basis of time divisions, and the classification of geologic history.
Jour. of Geol., vol. vi, pp. 449-462, 3 figs., 1898.
Discusses the evidences that the history of the earth can be classified into natural divisions by the recognition of its inherent periods.

146 —— A systematic source of evolution of provincial faunas.
Jour. of Geol., vol. vi, pp. 597-608, 1898.
Discusses the characteristics of the movements of the earth crust and the relation and influence of the attitude of sea to land in the evolution of faunas.

147 **Chamberlin** (T. C.). The influence of great epochs of limestone formation upon the constitution of the atmosphere.

Jour. of Geol., vol. vi, pp. 609–621, 1898.

Discusses the relation of carbon dioxide to geologic processes, and the changes that are effected in the atmosphere through the building up of great limestone formations.

148 —— A group of hypotheses bearing on climatic changes.

Brit. Assoc. Adv. Sci. Rept., 1897, pp. 644–647, 1898; Jour. of Geol., vol. v, pp. 653–683, 1897.

Discusses the indications of glaciations during geologic time, and the theories as to the origin and development of the earth and of the atmosphere.

149 —— A supplementary hypothesis respecting the origin of the loess of the Mississippi Valley.

Abstract, Am. Assoc. Adv. Sci., Proc. vol. xlvi, pp. 204–205, 1898.

See Bibliography and Index for 1897, No. 120.

150 **Chester** (Albert H.). On krennerite from Cripple Creek, Colorado.

Am. Jour. Sci., 4th ser., vol. v, pp. 375–377, 1 fig., 1898.

Describes its chemical and crystallographic character.

151 **Chittenden** (A. Percival). Mountain structures of Pennsylvania.

Am. Geog. Soc., Bull., vol. xxix, pp. 175–180, 6 figs., 1897.

Review by W. M. Davis, Science, new ser., vol. vii, p. 203 (½ p.), 1898.

Discusses the origin of the mountain structures.

152 **Clark** (William Bullock). With the collaboration of R. M. Bagg and George B. Shattuck. Report upon the Upper Cretaceous formations [New Jersey].

N. J. Geol. Surv., Ann. Rept. for 1897, pp. 161–210, 1898.

Reviews the literature on the formation, describes the topographic features and the character and occurrence of the subdivisions of the Upper Cretaceous, and discusses their correlation.

153 —— [Contribution to "A symposium of the classification and nomenclature of geologic time divisions."]

Jour. of Geol., vol. vi, pp. 340–342, 1898.

154 **Clarke** (John M.). The geological conditions at the site of the proposed dam and storage reservoir of the Genesee River at Portage [New York].

N. Y. State engineer and surveyor, Ann. Rept., 1896, pp. 730–746, 1897.

Describes the character and occurrence of the Portage group, the topographic features of the region, and the erosion of the Portage group.

155 —— The stratigraphic and faunal relations of the Oneonta sandstone and shales, the Ithaca and Portage groups in central New York.

N. Y., 15th Ann. Rept. State Geologist, vol. i, pp. 11–12, 31–81, pls. i–vii, 9 figs., 1897; N. Y. State Mus., 49th Ann. Rept., vol. ii, pp. 31–81, pls. i–vii, 9 figs., 1898.

Gives a historical sketch of these groups, a discussion of their stratigraphic and faunal relations, and two geologic maps.

156 **Clarke** (John M.). Notes on some crustaceans from the Chemung group of New York.

N. Y., 15th Ann. Rept. State Geologist, vol. i, pp. 729–738, figs. 1–4, 1897; N. Y. State Mus., 49th Ann. Rept., vol. ii, pp. 729–738, figs. 1–4, 1898.

Describes Pephricaris horripilata n. sp., and Bronteus senescens Clarke.

157 **Claypole** (E. W.). Microscopical light in geological darkness.

Am. Geol., vol. xxii, pp. 217–228, 1898.

Describes the use of the microscope in the study of geologic phenomena.

158 —— Glacial theories, cosmical and terrestrial.

Am. Geol., vol. xxii, pp. 310–315, 1898.

Discusses various hypotheses.

159 **Clements** (J. Morgan). A study of some examples of rock variation.

Jour. of Geol., vol. vii, pp. 372–392, 1898; Review, Am. Geol., vol. xxii, p. 381 (½ p.); Am. Nat., vol. xxxii, pp. 966–967, 1898.

Describes the microscopic and chemical characters of diorite, gabbros, and peridotites of Crystal Falls, Michigan, and discusses the relations of the rocks of the series.

160 **Clendenin** (W. W.). Clays of Louisiana.

Eng. and Mg. Jour., vol. lxvi, pp. 456–457, 1898.

Describes the occurrence and character of the clays of the State.

161 **Coleman** (Arthur P.). Clastic Huronian rocks of western Ontario.

Geol. Soc. Am., Bull., vol. ix, pp. 223–238, 1 fig., 1898; Abstracts Jour. of Geol., vol. vi, pp. 212–214; Science, new ser., vol. vii, p. 81 (½ p.), 1898.

Discusses the classification of the series and describes the Huronian clastics, the relations of the Laurentian and Huronian, and the geologic history of the region.

162 —— Glacial and interglacial deposits at Toronto [Canada.]

Brit. Assoc. Adv. Sci., Rept., 1897, pp. 650–651, 1898.

Describes glacial phenomena of the vicinity.

163 —— Notes on the western Ontario gold fields.

Federated Can. Mg. Inst., Jour., vol. ii, pp. 278–282, 1898.

Describes the occurrence and character of the gold-bearing deposits.

164 **Cooper** (A. S.). A bituminous rock deposit in Santa Barbara County, California.

Eng. and Mg. Jour., vol. lxvi, pp. 278–279, 4 figs., 1898.

Describes the geology of the region and the occurrence of the bituminous rock.

165 —— Southern California petroleum.

Mg. and Sci. Press, vol. lxxvii, p. 372, 2 figs., 1898.

Describes occurrence of petroleum in Santa Barbara County, California.

166 **Cowles** (Henry C.). [Review of "Fossil Plants for Students of Botany and Geology, vol. i," by A. C. Seward.]

Jour. of Geol., vol. vi, pp. 436–438; Bot. Gaz., vol. xxvi, pp. 59–61, 1898.

167 **Crane** (W. R.). Geography and detailed stratigraphy of the Kansas Coal Measures; description of mines, mining methods, and mining machinery; chemical and physical properties of Kansas coals; output and commerce; mining directory, and mining laws.

Kan. Univ. Geol. Surv., vol. iii, pp. 108–336, pls. xxxi–lxx, figs. 4–54, 1898.

168 **Crawford** (J.). Recent severe seismic disturbances in Nicaragua.

Am. Geol., vol. xxii, pp. 56–58, 1898.

Describes earthquake shocks.

169 **Crosby** (W. O.). Geology: South shore [vicinity of Boston, Mass.].

Am. Soc. Adv. Sci., fiftieth anniversary meeting. Guide to localities illustrating the geology, marine zoology, and botany of the vicinity of Boston. Edited by A. W. Grabau and J. E. Woodman, pp. 21–31, 3 figs. Salem, Mass., 1898.

Describes the geologic features of the region and gives a list of papers on its geology.

170 —— History of the Blue Hills complex [Massachusetts].

Abstracts: Am. Assoc. Adv. Sci., Proc., vol. xlvii, pp. 304–305; Am. Geol., vol. xxii, pp. 263–264, 1898.

Describes the igneous and sedimentary rocks of the region.

171 —— [Review of various geologic papers.]

Am. Geol., vol. xxii, pp. 377–383, 1898.

172 **Cross** (Whitman). The geological versus the petrographical classification of igneous rocks.

Jour. of Geol., vol. vi, pp. 79–91; Abstracts, Science, new ser., vol. vii, p. 83 (½ p.); Am. Nat., vol. xxxii, pp. 465–466, 1898.

Refers to the many broad classifications of rock masses necessary from a geologic standpoint, and concludes that most geologic criteria are not available for the construction of a systematic classification of rocks as objects—the petrographic scheme.

173 —— Geology of the Cripple Creek gold mining district [Colorado].

Colo. Sci. Soc., Proc., vol. v, pp. 24–49, 1898.

See Bibliography and Index for 1896, No. 150.

174 —— The San Miguel formation.

Colo. Sci. Soc., Proc., vol. v, pp. 235–241, 1898.

See Biblography and Index for 1896, No. 152.

175 —— See **Day** (W. C.), No. 227.

176 —— See **Diller** (J. S.), No. 234.

177 **Crump** (H. M.). The clays and building stones of Kentucky.

Eng. and Mg. Jour., vol. lxvi, pp. 190–191, 1898.

Includes notes on their character and occurrence.

178 **Culbertson** (Glenn). Preliminary work for the approximate determination of the time since the retreat of the first great ice sheet.

Ind. Acad. Sci., Proc. 1897, pp. 242–243, 1898.

Describes methods of work employed in Jefferson County, Indiana, for determining the time interval.

179 **Cumings** (Edgar R.), **Prosser** (Charles S.), and. Sections and thickness of the Lower Silurian formations on West Canada Creek and in the Mohawk Valley [New York].

See Prosser (C. S.), and Cumings (E. R.), No. 643.

180 **Cummins** (W. F.). Texas Permian.

Texas Acad. Sci., Trans., vol. ii, pp. 93–98, 1897.

Discusses the character and relations of the Texas Permian subdivisions, and describes recent observations on the Wichita division.

181 **Cushing** (H. P.). Syenite-porphyry dikes in the northern Adirondacks [New York].

Geol. Soc. Am., Bull., vol. ix, pp. 239–256, pl. 17, 1 fig.; Abstracts, Jour. of Geol., vol. vi, pp. 119–120; Am. Geol., vol. xxii, p. 382 (½ p.); Am. Nat., vol. xxxii, pp. 534–335 (½ p.); Science, new ser., vol. vii, pp. 80–81 (½ p.), 1898.

Describes the occurrence and distribution of the dikes and the mineralogic and chemical composition of the dike rocks.

182 —— Report on the geology of Clinton County [New York].

N. Y. 15th Ann. Rept. State Geologist, vol. i, pp. 21–22, 499–573, pls. i–iv, 13 figs., 1897; N. Y. State Mus., 49th Ann. Rept., vol. ii, pp. 499–573, pls. i–iv., 13 figs., 1898.

Describes the physiography, the general geologic relations, the character of the igneous rocks, and of the Cambrian, Silurian, and Pleistocene deposits, and the metamorphism of the pre-Cambrian rocks. Includes details of township geology.

D.

183 **Dall** (William Healey). Contributions to the Tertiary fauna of Florida, with especial reference to the Miocene silex beds of Tampa and the Pliocene beds of the Caloosahatchie River.

Wagner Free Inst. Sci., Trans., vol. iii, Pt. III, pp. 483–570, 1895.

Includes descriptions of the families of the orders Prionodesmacea, Anomalodesmacea, Teleodesmacea, and Paleoconcha, and notes on nomenclature.

184 —— Contributions to the Tertiary fauna of Florida, with especial reference to the silex beds of Tampa and the Pliocene beds of the Caloosahatchie River, including in many cases a complete revision of the generic groups treated of and their American Tertiary species.

Wagner Free Inst. Sci., Trans., vol. iii, Pt. IV. pp. 571–916, pls. xxiii–xxv, 1898

185 **Dall** (William Healey). Notes on the paleontological publications of Professor William Wagner.

Wagner Free Inst. Sci. Trans., vol. v, pp. 7-11, pls. i-iii, 1898.

Includes notes on species described by Professor Wagner and illustrations of a number of species.

186 —— [Paleontology of the collections from Isthmus of Panama and Costa Rica].

Harvard Coll. Mus. Comp. Zool., Bull., vol. xxviii, No. 5, pp. 271-275, 1898.

Gives the author's conclusions regarding the different horizons from a study of materials collected by R. T. Hill.

187 —— A table of the North American Tertiary horizons correlated with one another, and with those of western Europe, with annotations.

U. S. Geol. Surv., 18th Ann. Rept., Pt. II, pp. 327-348, 1898.

Defines the main divisions of the Tertiary and includes note on the table.

188 —— Synopsis of the recent and Tertiary Psammobiidæ of North America.

Phil. Acad. Nat. Sci., Proc. 1898, pp. 57-62, 1898.

Gives a list of the genera and species.

189 —— A new subgenus of Coralliophaga.

The Nautilus, vol. xi, p. 135, 1898.

Describes material from the Tertiary of Alabama.

190 —— See **Leidy** (Joseph) No. 481.

191 **Dana** (E. S.). A text-book of mineralogy with an extended treatise on crystallography and physical mineralogy.

John Wiley and Sons, New York, 1898.

Review of J. P. Iddings, Jour. of Geol., vol. vi, pp. 756-757, 1898.

192 **Darton** (Nelson Horatio). A preliminary description of the faulted region of Herkimer, Fulton, Montgomery, and Saratoga counties [New York].

N. Y., 14th Ann. Rept. State Geologist, pp. 33-53, pls. 1-9, 12 figs., 1897; N. Y. State Mus., 48th Ann. Rept., vol. ii, pp. 33-53, pls. 1-9, 12 figs., 1897; Review by Stuart Weller, Jour. of Geol., vol. vi, p. 205 (½ p.), 1898.

Describes the faults of the region and the occurrence of the crystalline, Cambrian, and Ordovician rocks.

193 —— Preliminary geological map of Albany County [New York].

N. Y., 15th Ann. Rept. State Geologist, vol. i, 1897.

194 —— Underground waters of a portion of southeastern Nebraska.

U. S. Geol. Surv., Water Supply and Irrigation Papers, No. 12, 53 pp., pls. i-xxi, figs. 1-14, 1898.

Describes the occurrence and character of the Carboniferous, Cretaceous, Tertiary, Pleistocene and Recent formations of the region, and the artesian wells and water supply.

195 **Darton** (Nelson Horatio). Discovery of marine Cretaceous in boring at Norfolk, Virginia.

Abstract, Geol. Soc. Am., Bull., vol. ix, pp. 414-416; Science, new ser., vol. vii, p. 52 (8 l.), 1898.

Describes the materials from the borings and gives a list of the fossils.

196 —— Geothermal data from deep artesian wells in the Dakotas.

Am. Jour. Sci., 4th ser., vol. v, pp. 161-168, 2 figs., 1898. Abstract, Science, new ser., vol. vii, p. 84 (½ p), 1898.

Presents data regarding the temperature of underground waters.

197 —— Tertiary of South Dakota and Nebraska.

Abstract, Science, new ser., vol. vii, p. 359 (½ p.), 1898.

Summary of paper read before the Geological Society of Washington.

198 —— and **Keith** (Arthur). On dikes of felsophyre and basalt in Paleozoic rocks in central Appalachian Virginia.

Am. Jour. Sci., 4th ser., vol. vi, pp. 305-315, 1 fig., 1898.

Describes the occurrence and character of the dikes and includes petrographic notes on the dike rocks.

199 **Davis** (William M.). The Triassic formation of Connecticut.

U. S. Geol. Surv., 18th Ann. Rept., Pt. II, pp. 9-192, pls. i-xx, figs. 1-52, 1898.

Describes the deposition, character, and occurrence of the Triassic strata, the occurrence and character of the igneous rocks, and the deformation and denudation of the region.

200 ——Physiography [portions of New England].

Am. Assoc. Adv. Sci., Anniversary Meeting, Guide to localities illustrating the geology, marine zoology, and botany of the vicinity of Boston. Edited by A. W. Grabau and J. E. Woodman, pp. 1-7, 9 figs., Salem, Mass., 1898.

Describes the physiographic features of the uplands of southern New England, the coastal plain of Maine, and the Meriden district of the Connecticut Valley. Gives a list of papers on the physiography of the region.

201 —— [Review of "Topographic atlas of the United States—physiographic types," by Henry Gannett.]

Jour. of Geol., vol. vi, pp. 431-433, 1898. Science, new ser., vol. vii, p. 766, 1898.

202 —— [Review of "Geology of the St. Croix Dalles," by C. P. Berkey.]

Science, new ser., vol. vii, p. 57 (½ p.), 1898.

203 —— The grading of mountain slopes.

Abstract, Science, new ser., vol. vii, p. 81 (½ p.), 1898.

204 —— [Review of "The physical geography of New York," by R. S. Tarr.]

Science, new ser., vol. vii, pp. 124-125, 1898.

205 —— [Review of "The topography of Mexico," by H. M. Wilson.]

Science, new ser., vol. vii, p. 125 (½ p.), 1898.

206 **Davis** (William M.). [Review of "Some pre-Glacial drainage features of southern Ohio," by W. G. Tight.]
Science, new ser., vol. vii, p. 203 (½ p.), 1898.

207 —— [Review of "Great changes of level in Mexico and the interoceanic connections," by J. W. Spencer.]
Science, new ser., vol. vii, p. 203 (½ p.), 1898.

208 —— [Review of "Mountain structures of Pennsylvania," by A. P. Chittenden.]
Science, new ser., vol. vii, p. 203 (½ p.), 1898.

209 —— [Review of "Cote sans Dessein and Grand Tower," by C. F. Marbut.]
Science, new ser., vol. vii, p. 273 (½ p.), 1898.

210 —— [Review of "Artesian well prospects in the Atlantic coastal plain region," by N. H. Darton.]
Science, new ser., vol. vii, pp. 273–274 (½ p.), 1898.

211 —— [Review of "Waterfall lakes in central New York," by E. C. Quereau.]
Science, new ser., vol. vii, pp. 489–490, 1898.

212 —— [Review of "A geological reconnaissance of the coal fields of the Indian Territory," by N. F. Drake.]
Science, new ser., vol. vii, p. 561 (½ p.), 1898.

213 —— [Review of "Submerged valleys of the coast of California, U. S. A.," by George Davidson.]
Science, new ser., vol. vii, p. 562, 1898.

214 —— [Review of "Water resources of Indiana and Ohio," by Frank Leverett.]
Science, new ser., vol. vii, pp. 562–563, 1898.

215 —— [Review of "Origin of the gorge of the Whirlpool Rapids at Niagara," by F. B. Taylor.]
Science, new ser., vol. vii, p. 627 (½ p.), 1898.

216 —— [Review of "Drift phenomena of Puget Sound," by Bailey Willis.]
Science, new ser., vol. vii, pp. 704–705 (½ p.), 1898.

217 —— [Review of "The physical geography of New Jersey," by R. D. Salisbury.]
Science, new ser., vol. vii, pp. 765–766 (½ p.), 1898.

218 —— [Review of "Geology of Yukon gold district, Alaska," by J. E. Spurr and H. B. Goodrich.]
Science, new ser., vol. vii, p. 850 (½ p.), 1898.

219 —— [Review of "The physical geography of Worcester, Massachusetts," by J. H. Perry.]
Science, new ser., vol. vii, pp. 850–851 (½ p.), 1898.

220 **Davis** (William M.). [Review of "Late formations and great changes of level in Jamaica," by J. W. Spencer.]
Science, new ser., vol. vii, p. 851 (½ p), 1898.

221 —— [Geology and its relations to topography.]
Am. Soc. Civil Engrs., Trans., vol. xxxix, pp. 86–88, 1898.
In discussion of paper by John C. Branner on the same subject.

222 **Dawson** (George M.). Summary report of the Geological Survey department for the year 1896 [Canada].
Canada Geol. Surv., new ser., vol. ix, Rept. A, 144 pp., 1898.
Gives a summary of the office and field work of the survey.

223 **Dawson** (J. William). On the genus Lepidophloios as illustrated by specimens from the coal formation of Nova Scotia and New Brunswick.
Can. Roy. Soc., Proc. and Trans., 2d ser., vol. iii, sect. iv, pp. 57–78, pls. i–xiv, figs. A–D, 1898.
Describes L. acadianus and L. cliftonensis and discusses the relations with other species and the relations of Lepidophloios to certain other genera.

224 —— Note on Lepidophloios cliftonensis.
Geol. Soc. Am., Bull., vol. ix, p. 416 (101), 1898; Abstract, Science, new ser., vol. vii, pp. 79–80 (½ p.), 1898.

225 **Dawson** (William L.). Glacial phenomena in Okanogan County. Washington.
Am. Geol., vol. xxii, pp. 203–217, 4 figs., 1898.
Describes the physiography and development of the glacial drainage of the region and the occurrence of terraces and other glacial phenomena.

226 **Day** (David T.). Platinum.
U. S. Geol. Surv., 19th Ann. Rept., Pt. VI, pp. 265–271, 1898.
Includes statistics of production and notes on occurrence in California and British Columbia.

227 **Day** (William C.). Stone.
U. S. Geol. Surv., 19th Ann. Rept., Pt. VI (continued), pp. 205–315, 1898.
Includes statistics of production, petrographic notes on granite from Barre, Vermont, by Whitman Cross; notes on character and occurrence of New England granites on California marbles, by E. W. Hilgard and George Madeira, and on West Virginia marbles by George C. Underwood; on the Bangor roofing slates of Pennsylvania, by Mansfield Merriam, and on sandstones from Niles, California, by E. W. Hilgard; a description of the Bedford oolitic limestone of Indiana, by C. E. Siebenthal, and chemical analyses of various building stones.

228 **Dean** (Bashford). Note on the ventral armoring of Dinichthys.
N. Y. Acad. Sci., Trans., vol. xvi, pp. 57–61, 1898.

229 —— On a new species of Edestus, E. lecontei, from Nevada.
N. Y. Acad. Sci., Trans., vol. xvi, pp. 61–69, 1898.
Describes a new species and discusses its evidence of the primitive mode of spine formation within the phylum of fishes.

230 —— See **Newberry** (J. S.), No. 573.

231 **De Kalb** (Courtenay). The onyx marbles.
Stone, vol. xvii, pp. 397–405, 1898.
Describes the occurrence of onyx marbles.

232 —— See **Parker** (E. W.), No. 598.

233 **Derby** (Orville A.). On the origin of certain siliceous rocks.
Jour. of Geol., vol. vi, 366–368, 1898.
Discusses the origin of the Arkansas novaculite.

234 **Diller** (Joseph Silas). The educational series of rock specimens collected and distributed by the United States Geological Survey.
U. S. Geol. Surv., Bull. No. 150, 400 pp., pls. i–xlvii, figs. 1–18, 1898.
Describes the structural and physical features of rocks, the principal rock-making minerals, and the classification of rocks, with descriptions and chemical analyses of the educational series of rocks distributed by the U. S. Geological Survey.

235 —— Roseburg folio, Oregon.
U. S. Geol. Surv., Geol. Atlas of U. S., Folio No. 49, 1898.
Describes the topography, the occurrence of the Juratrias (?), Cretaceous, Tertiary, and igneous rocks, and the occurrence of gold, coal, cement, and building stone. Discusses the origin of the topography. Includes topographic and geologic maps.

236 **D'Invilliers** (E. V.).
Franklin Inst., Jour., vol. cxlvi, pp. 41–42, 1898.
[In discussion of paper by R. Cabrera on "Mineral resources of Cuba."]

237 **Douglas** (James). The copper industry of Arizona.
The Mineral Industry 1897, pp. 227–232, 1898.
Describes the occurrence of copper in the mines of Arizona.

238 **Douvillé** (M. H.). Sur les couches à rudistes du Texas.
Soc. Géol. de France, Bull., vol. xxvi, pp. 387–388, 1898.
Discusses the paleontologic evidence of the age of certain subdivisions of the Cretaceous of Texas.

239 **Drake** (Noah Fields). A geological reconnaisance of the coal fields of the Indian Territory.
Am. Phil. Soc., Proc., vol. xxxvi, pp. 226–419, pls. i–ix, 6 figs., 1897. Leland Stanford Univ., Pub., Cont. to Biology, xiv, pp. 226–419, pls. i–ix, 6 figs., 1898; Review by C. R. Keyes, Jour. of Geol., vol. vi, pp. 652–658, 1898.
Describes the character, occurrence, distribution, and classification of the Coal Measures and the occurrence and character of the coals, and gives lists of fossils collected and description of three new species.

240 **Drygalski** (Erich von). Grönlands Eis und sein Vorland.
Grönland-expedition der Gesellschaft für Erdkunde zu Berlin, Erster band, 556 pp., 44 pls., 54 figs. and 9 maps, 1897.
Describes the physiographic features and glacial phenomena of portions of Greenland.

241 **Dumble** (E. T.). Some Texas oil horizons.

Texas Acad. Sci., Trans., vol. ii, pp. 87–92, 1897.

Describes occurrence in Carboniferous and Cretaceous strata.

242 **Dunn** (Russell L.). The country of the Klondike [Alaska].

Mg. and Sci. Press, vol. lxxvii, pp. 400, 425–426 and 449, 1898.

Describes the glacial features of the region and the occurrence of the gold-bearing rocks and placers.

E.

243 **Eakle** (Arthur S.). Erionite, a new zeolite.

Am. Jour. Sci., 4th ser., vol. vi, pp. 66–68; Review, Am. Geol., vol. xxii, p. 378 (½ p.), 1898.

Describes the occurrence and chemical character of the material found in a rhyolite tuff from Oregon.

244 —— A biotite-tinguaite dike from Manchester by the Sea, Essex County, Massachusetts.

Am. Jour. Sci., 4th ser., vol. vi, pp. 489–492, 1898.

Describes the occurrence of the dike and the microscopic and chemical characters of the dike rocks.

245 **Earle** (Charles). Relationship of the Chriacidæ to the primates.

Am. Nat., vol. xxxii, pp. 261–262, 1898.

246 **Eastman** (C. R.). Dentition of Devonian Ptyctodontidæ.

Am. Nat., vol. xxxii, pp. 473–488, 545–560, 50 figs., 1898.

Describes material from the State quarry beds of Iowa and discusses the relations of the Devonian fish fauna of Milwaukee, Wisconsin.

247 —— Some new points in Dinichthyid osteology.

Am. Nat., vol. xxxii, pp. 747–768, 6 figs., 1898.

248 —— On the occurrence of fossil fishes in the Devonian of Iowa.

Iowa Geol. Surv., vol. vii, pp. 108–116, pl. iv, fig. 10, 1897; Review by C. R. Keyes, Am. Geol., vol. xxii, pp. 237–238, 1898.

Discusses the differences in the Devonian and Carboniferous fish faunas.

249 **Eaton** (G. F.). The prehistoric fauna of Block Island, as indicated by its ancient shell heaps.

Am. Jour. Sci., 4th ser., vol. vi, pp. 137–159, 1898.

Describes the general geologic and geographic features of the island and the occurrence and distribution of the shell heaps. Gives lists of the species found in them.

250 **Elftman** (A. H.). The geology of the Keweenawan area in northeastern Minnesota.

Am. Geol., vol. xxi, pp. 90–109, with map, 175–188, vol. xxii, pp. 131–149, pl. vii, 1898.

Describes the glacial geology of the region and gives a historical review and description of the stratigraphy of the Keweenawan series and an account of the gabbro group.

251 **Elftman** (A. H.). The St. Croix River Valley [Minnesota-Wisconsin].

Am. Geol., vol. xxii, pp. 58–61, 1898.

Describes the relation of the preglacial and postglacial courses of the river.

252 **Ellis** (W. Hodgson) and **Lawson** (William). Chemical notes on the so-called Sudbury coal [Ontario].

Can. Inst., Proc., new ser., vol. i, pp. 67–68, 1897.

Gives chemical analyses of the coals.

253 **Ells** (R. W.). Notes on the Archean of eastern Canada.

Can. Roy. Soc., Proc. and Trans., 2d ser., vol. iii, sect. iv, pp. 117–124, 1898.

Describes the occurrence and general character of the Laurentian and Huronian rocks.

254 —— Sands and clays of the Ottawa Basin [Canada].

Geol. Soc. Am., Bull., vol. ix, pp. 211–222, pl. 16; Abstracts, Jour. of Geol., vol. vi, pp. 117–118; Science, new ser., vol. vii, pp. 49–50 (½ p.), 1898.

Describes the physiography of the region, the character and distribution of the sands and clays and other glacial phenomena.

255 —— Problems in Quebec geology.

Brit. Assoc. Adv. Sci., Rept. 1897, pp. 640–642, 1898; Abstract, Ottawa Nat., vol. xi, pp. 173–176, 1897.

Describes the general results of the study of the geology of the Province.

256 —— Formations, faults, and folds of the Ottawa district [Canada].

Ottawa Nat., vol. xi, pp. 177–189, 1898.

Describes the occurrence, character, and structure of the Ordovician strata of the vicinity.

257 **Emerson** (B. K.). Geology: Turner Falls region. Two excursions in the Connecticut Valley [Massachusetts].

Am. Assoc. Adv. Sci., fiftieth anniversary meeting. Guide to localities illustrating the geology, marine zoology, and botany of the vicinity of Boston. Edited by A. W. Grabau and J. E. Woodman, pp. 33–35, Salem, Massachusetts, 1898.

Describes the geologic features of the region.

258 —— Holyoke folio, Massachusetts–Connecticut.

U. S. Geol. Surv., Geol. Atlas of the U. S., Folio No. 50, 1898.

Describes the topography, the character, and occurrence of the rocks of the Algonkian, Cambrain, Silurian, Devonian, Carboniferous, Jura-Trias, and Pleistocene periods of western Massachusetts and of the Holyoke quadrangle. Describes the post-Glacial deposits and the occurrence of building stones and clay. Includes topographic and geologic maps of the Holyoke quadrangle.

259 **Emmons** (Samuel Franklin). Tenmile district special folio, Colorado.

U. S. Geol. Surv., Geol. Atlas of the U. S., Folio No. 48, 1898.

Describes the geographic features, occurrence and character of the Archean, Cambrian, Silurian, and Carboniferous strata, recent deposits, diorite-porphyries and rhyolites of the region. Discusses the structural relations and orographic disturbances and describes the geographic and geologic distribution, character, and occurrence of the silver-ore bodies. Accompanied by topographic and geologic maps and structure sections.

260 —— Map of Alaska, showing known gold-bearing rocks, with descriptive text containing sketches of the geography, geology, and gold deposits and routes to the gold fields.

U. S. Geol. Surv. (prepared in accordance with public resolution No. 3 of the Fifty-fifth Congress, second session, approved January 20, 1898), 44 pp. and geologic map, Washington, 1898.

Review Zeit. für prak. Geol., Heft 8, pp. 292–297; Abstracts, Nat. Geog. Mag., vol. ix, pp. 139–172, 3 pls.; Mg. and Sci. Press, vol. lxxvi. pp. 314–315, 341–342, 370, and 393, 1898.

260*a* —— [Geology of the Aspen mining district, Colorado, Introduction.]

U. S. Geol. Surv., Mon. XXXI, pp. xvii–xxxii, 1898.

Includes an account of the development of the Aspen mining district and the geologic investigations that have been made in the region.

261 **Evans** (Nevil N.). Chemical composition of the granite from Pine Lake, Ontario.

Abstract, Science, new ser., vol. viii, p. 82 (¼ p.), 1898.

F.

262 **Fairbanks** (Harold W.). Geology of a portion of the southern coast ranges.

Jour. of Geol., vol. vi, pp. 551–576, 2 figs., 1898.

Describes the topographic features, the character and occurrence of the Jurassic, Cretaceous, Tertiary, and Pleistocene deposits and of the igneous rocks. Discusses the structure and geologic history of the region.

263 —— The great Sierra Nevada fault scarp.

Pop. Sci. Mo., vol. lii, pp. 609–621, 7 figs., 1898.

Discusses the history of the fault scarp along the eastern base of the Sierra Nevada range.

264 —— Bituminous rock deposits in the vicinity of San Luis Obispo, California.

Mg. and Sci. Press, vol. lxxvi, p. 661, 1 fig., 1898.

Describes the occurrence of the bituminous rock and discusses its origin.

265 **Fairchild** (Herman Le Roy). Kettles in glacial lake deltas.

Jour. of Geol., vol. vi, pp. 589–596, 3 figs., 1898.

Describes occurrence at Potter, New York, and discusses its origin and formation.

266 **Fairchild** (Herman Le Roy). Glacial geology of western New York.

Brit. Assoc. Adv. Sci., Rept. 1897, p. 664 (½ p.), 1898; Geol. Mag. Dec. iv, vol. iv, pp. 529–537, with map, 1897.

Describes the glacial deposits and phenomena of the State.

267 —— Glacial geology in America.

Am. Assoc. Adv. Sci., Proc., vol. xlvii, pp. 257–290; Sci. Am. Suppl., vol. xlvi, pp. 18972–18974, 18989–18990, 19001–19002; Am. Geol., vol. xxii, pp. 154–189, 1898.

Reviews the early literature on the glaciation of North America and the literature on the cause, time divisions, character, and origin of the various glacial phenomena.

268 —— Basins in glacial lake deltas.

Abstracts: Am. Assoc. Adv. Sci., Proc., vol. xlvii, p. 291 (½ p.); Science, new ser., vol. viii, p. 467 (½ p.); Am. Geol., vol. xxii, p. 254 (½ p.), 1898.

Describes occurrence near Potter, N. Y., and discusses its origin.

269 —— Glacial waters in the Finger Lake region of New York.

Abstracts: Science, new ser., vol. viii, p. 463 (½ p.); Am. Geol., vol. xxii, p. 249 (9 l.), 1898.

270 **Farrington** (Oliver C.). Datolite from Guanajuato [Mexico].

Am. Jour. Sci., 4th ser., vol. v, pp. 285–288, 5 figs., 1898.

Describes the crystallographic characters of the material.

271 **Ferrier** (W. F.), **Barlow** (A. E.) and. On the relations and structure of certain granites and associated arkoses of Lake Temiscaming, Canada.

See Barlow (A. E.) and Ferrier (W. F.), No. 50.

272 **Fitzpatrick** (T. J.). The drift section and the glacial striæ in the vicinity of Lamoni, Iowa.

Iowa Acad. Sci., Proc., vol. v, pp. 105–106, pl. viii, 1898.

Describes occurence of beds of driftwood and buried forest, and discusses its bearing on the question of the existence of a pre-Kansas stage.

273 **Foerste** (August F.). A report on the Niagara limestone quarries of Decatur, Franklin, and Fayette counties, with remarks on the geology of the Middle and Upper Silurian rocks of these and neighboring (Ripley, Jennings, Bartholomew, and Shelby) counties [Indiana].

Ind. Dept. of Geol. and Nat. Res., 22d. Ann. Rept., pp. 195–255, pls. xiv–xviii, 1898; Abstract, Stone, vol. xvii, pp. 253–256, 1898.

Gives a general description of the Silurian strata and local details of the quarries.

274 **Foote** (H. W.), **Penfield** (S. L.) and. On clinohedrite, a new mineral from Franklin, N. J.

See Penfield (S. L.) and Foote (H. W.), No. 619.

275 **Foote** (Warren M.). Note on the occurrence of native lead with roeblingite, native copper, and other minerals at Franklin Furnace, New Jersey.

Am. Jour. Sci., 4th ser., vol. vi, pp. 187–188, 1898.

Describes the characters of the material.

276 **Fowke** (Gerard). Preglacial drainage in the vicinity of Cincinnati; its relation to the origin of the modern Ohio River, and its bearing upon the question of the southern limits of the ice sheet.

Dennison Univ., Sci. Lab., Bull., vol. xi, Art. I, pp. 1–10, pl. i, 1898.

Describes the origin and geologic history of the Ohio River and the southern limit of the ice sheet.

277 **Frazer** (Persifor). Notes on the northern Black Hills of South Dakota.

Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 204–231, 1898.

Describes the general geology of the region and the occurrence of the gold ores. Includes a bibliography.

278 —— Archean character of the nuclei of the Antilles.

Am. Geol., vol. xxi, pp. 250–251 (½ p.), 1898.

279 **Frenzel** (A. B.). The turquoise deposit in Mohave County, Arizona.

Eng. and Mg. Jour., vol. lxvi, p. 697, 1 fig., 1898.

Describes the occurrence and chemical character of the material.

280 **Fuller** (Myron L.). Notes on a Carboniferous bowlder train in eastern Massachusetts.

Boston Soc. Nat. Hist., Proc., vol. xxviii, pp. 251–263, with map, 1898.

Describes the character and distribution of the material and gives a bibliography of the subject.

281 —— Champlain submergence in the Narragansett Bay region [Rhode Island].

Am. Geol., vol. xxi, pp. 310–321, 1898.

Discusses theories as to the origin of certain glacial phenomena of the region.

282 —— Crushed quartz and its source.

Stone, vol. xviii, pp. 1–4, 1 fig., 1898.

Describes the material from which the crushed quartz used in polishing, manufacture of glass, etc., is obtained.

G.

283 **Gannett** (Henry). Physiographic types.

U. S. Geol. Surv., Topographic atlas of U. S., folio 1, 1898; Reviews by W. M. Davis, Jour. of Geol., vol. vi, pp. 431–433; Science, new ser., vol. vii, p. 766, 1898.

Describes various physiographic types in the United States, illustrated by topographic maps.

284 **Gannett** (Henry). A gazetteer of Kansas.

U. S. Geol. Surv., Bull. No. 154, 246 pp., with map, 1898.

285 —— The aims and methods of cartography, with especial reference to the topographic maps now under construction in Maryland by the United States Geological Survey in cooperation with the Maryland Geological Survey.

Md. Geol. Surv., vol. ii, pp. 245–335, pls. xxxiii–xlii, figs. 20–26, 1898.

286 —— Lake Chelan [Washington].

Nat. Geog. Mag., vol. ix, pp. 417–428, 7 pls. and map, 1898.

Describes the physiographic features of the region.

287 —— Stanford's Compendium of Geography and Travel (new issue). North America. Vol. II, the United States.

London, Edward Stanford, 466 pp., 73 pls., 16 maps, 1898.

Review by H. R. Mill, Nature, vol. lviii, pp. 497–498, 2 figs., 1898.

288 **George** (R. D.). [Review of Annual Report, Geological Survey of Canada, new series, vol. ix.]

Jour. of Geol., vol. vi, pp. 857–858, 1898.

289 **Gilbert** (Grove Karl). Recent earth movements in the Great Lakes region.

U. S. Geol. Surv., 18th Ann. Rept., Pt. II, pp. 601–647, pl. cv, figs. 93–101, 1898; Nat. Geog. Mag., vol. viii, pp. 233–247, figs. 1–7, 1897; Abstract, Nature, vol. lvii, pp. 211–213, fig. 1, 1897.

Describes the general features of the region, the methods of obtaining the data, and gives a discussion and summary of results.

290 —— [Contribution to "A symposium of the classification and nomenclature of geologic time divisions."]

Jour. of Geol., vol. vi, pp. 338–340, 1898.

291 —— Bowlder pavement at Wilson, New York.

Jour. of Geol., vol. vi, pp. 771–775, pl. xiv, fig. 1, 1898.

Describes occurrence of bowlders in till, arranged horizontally and striated on the upper surfaces. Discusses mode of formation.

292 —— Joseph Francis James, 1857–1897.

Am. Geol., vol. xxi, pp. 1–11, pl. i, 1898.

Gives a sketch of his life and a list of his published papers.

293 —— A proposed addition to physiographic nomenclature.

Science, new ser., vol. vii, pp. 94–95, 1898.

Proposes the name "discrete" for the superficial, unconsolidated material which forms a mantle over a large part of the rock mass of the earth.

294 —— Origin of the physical features of the United States.

Nat. Geog. Mag., vol. ix, pp. 308–317, pls. 8–9, 1898.

Discusses the origin of land forms and describes the characters of the physical features of the United States.

295 —— See **Diller** (J. S.), No. 234.

275 **Foote** (Warren M.). Note on the occurrence of native lead with roeblingite, native copper, and other minerals at Franklin Furnace, New Jersey.
Am. Jour. Sci., 4th ser., vol. vi, pp. 187–188, 1898.
Describes the characters of the material.

276 **Fowke** (Gerard). Preglacial drainage in the vicinity of Cincinnati; its relation to the origin of the modern Ohio River,
posits in Nova Scotia. [illegible] of the southern limits of

298 —— The geological horizons of some Nova Scotia minerals.
Brit. Assoc. Adv. Sci., Rept. 1897, p. 663 (½ p.), 1898.
Mentions the geologic horizons at which certain minerals occur.

299 **Girty** (George H.). Description of a fauna found in the Devonian black shale of eastern Kentucky.
Am. Jour. Sci., 4th ser., vol. vi, pp. 384–394, 1 pl., 1898.
Discusses the correlation of the black shale with the Genesee shale of New York. Describes a new subgenus and two new species.

300 —— A revision of the sponges and coelenterates of the Lower Helderberg group of New York.
N. Y., 14th Ann. Rept. State Geologist, pp. 261–309, 7 pls., 1897; N. Y. State Mus., 48th Ann. Rept., vol. ii, pp. 261–309, 7 pls., 1897. Review by Stuart Weller, Jour. of Geol., vol. vi, pp. 206–207 (4 l.), 1898.

301 —— **Spencer** (A. C.) and. The Devonian in southwestern Colorado.
See Spencer (A. C.) and Girty (G. H.), No. 725.

302 **Goldsmith** (E.). Volcanic rocks of Mesozoic age in Pennsylvania.
Phil. Acad. Nat. Sci., Proc. 1898, pp. 90–97, pls. ii–v, 1 fig., 1898.
Describes occurrence and characters of trap rocks near Pottstown, Pa.

303 **Goode** (Richard U.). Bitterroot Forest Reserve [Idaho-Montana].
Nat. Geog. Mag., vol. ix, pp. 387–400, 4 figs. and map, 1898.
Describes the general physiographic features of the region.

304 **Goodrich** (Harold Beach). Recent warpings as shown by drainage peculiarities [Alaska].
U. S. Geol. Surv., 18th Ann. Rept., Pt. III, pp. 276–289, 1898.
Describes the Alaskan drainage and the warpings of the region, as measured by the streams, and gives a summary of conclusions.

305 —— See **Spurr** (J. E.), No. 739.

306 **Goodwin** (W. L.) and **Miller** (W. G.). Note on a mineral of the Columbite group.
Federated Can. Mg. Inst., Jour., vol. iii, pp. 151–152, 1898.
Describes the occurrence of the mineral in Ontario and gives a chemical analysis.

284 Gannett (Henry). A gazetteer of Kansas.
U. S. Geol. Surv., Bull. No. 154, 246 pp., with map, 1898.

285 —— The aims and methods of cartography, with especial reference to the topographic maps now under construction in Maryland by the United States Geological Survey in cooperation with the Maryland Geological Survey.
Md. Geol. Surv., vol. ii, pp. 245–335, pls. xxxiii–xlii, figs. 20–26, 1898.

286 —— Lake Chelan [illegible] section of the beds and [illegible] subdivisions of the Cretaceous of the region. [illegible] the Cretaceous group of southwest Kansas.

309 **Grabau** (Amadeus W.). Paleontology: eastern Massa

Am. Assoc. Adv. Sci., fiftieth aniversary meeting. Guide to the [illegible]ties illustrating the geology, marine zoology, and botany of the vicinity of Boston. Edited by A. W. Grabau and J. E. Woodman, pp. 37–62, Salem, Mass., 1898.

Gives lists of fossils found in the geologic formations of the region and a bibliography of the subject.

310 —— Paleontology of the Cambrian terranes of the Boston Basin [Massachusetts].

Abstracts: Am. Assoc. Adv. Sci., Proc., vol. xlvii, pp. 305–306 (½ p.), 1898; Science, new ser., vol. viii, p. 505 (½ p.); Am. Geol., vol. xxii, pp. 264–265 (½ p.), 1898.

311 —— Siluro-Devonian contact in western New York.

Science, new ser., vol. viii, p. 800 (½ p.), 1898.

Summary of paper read before the Harvard University Students' Geological Club.

312 —— Geology and paleontology of Eighteenmile Creek and the lake-shore sections of Erie County, New York. Part I.

Buffalo Soc. Nat. Hist., Bull., vol. vi, pp. iii–xxiv, 1–91, pls. i–xxvii, 1898.

Describes the lithologic and faunal characters and occurrence of the Devonian strata, and discusses the geologic history of the region.

313 **Grant** (C. C.). Geological notes.

Hamilton Assoc., Jour. and Proc., No. 14, pp. 89–100, 1898.

Describes local features of the Silurian near Hamilton, Ontario.

314 **Grant** (U. S.). Sketch of the geology of the eastern end of the Mesabi iron range in Minnesota.

Univ. of Minn., Engineers' Year Book, pp. 49–62, with map, 1898.

Describes the physiography, geologic history, occurrence of Animikie and pre-Animikie rocks, diabase sills and gabbro, and the occurrence of iron ores.

315 —— [Review of "Iowa Geological Survey, Vol. VI."]

Am. Geol., vol. xxi, pp. 64–65, 1898.

316 **Gratacap** (L. P.). Relation of James Hall to American geology.

Am. Nat., vol. xxxii, pp. 891–902, 1 pl., 1898.

317 **Gresley** (W. S.). Clay veins vertically intersecting Coal Measures.

Geol. Soc. Am., Bull., vol. ix, pp. 35-58, figs. 1-27, 1898.

Describes the occurrence and character of veins in coal, and discusses their age and origin. Includes a bibliography of the subject.

318 **Grimsley** (G. P.). Gypsum in Kansas.

Kan. Acad. Sci., Trans., vol. xv, pp. 122-127, 1898.

Describes the occurrence and distribution of the gypsum beds.

319 —— The study of natural palimpsests.

Kan. Acad. Sci., Trans., vol. xv, pp. 127-130, 1898.

Discusses the origin of metamorphic rocks.

320 —— The gypsum deposits of Kansas.

The Mineral Industry, 1897, pp. 395-396, 1898.

Describes the occurrence, character, and distribution of the deposits.

321 **Griswold** (Leon S.). The geology of Helena, Montana, and vicinity.

Assoc. of Eng. Soc.. Jour., vol. xx, No. 1, pp. 51-68, 3 figs., 1898.

Describes the character and occurrence of the igneous and metamorphic rocks and of the Algonkian, Cambrian, Silurian, and Carboniferous strata and the geologic structure of the region.

322 **Gulliver** (F. P.). Classification of coastal forms.

Abstracts: Science, new ser., vol. viii, p. 466 (½ p.); Am. Geol., vol. xxii, p. 253 (½ p.), 1898.

323 —— Note on Monadnock.

Abstract, Am. Geol., vol. xxii, p. 253 (5 l.), 1898.

324 **Gwillim** (J. C.). Some west Kootenay ore bodies [British Columbia].

Federated Can. Mg. Inst., Jour., vol. iii, pp. 19-26; Can. Mg. Rev., vol. xviii, pp. 17-19, 1898.

Describes the occurrence and character of the gold, silver, and copper ores of the region.

H.

325 **Hall** (James). A discussion of Streptelasma and allied genera of rugose corals.

N. Y., 15th Ann. Rept. State Geologist, vol. i, pp. 24-25, 1897.

Gives a brief abstract of the paper.

326 —— The Paleozoic hexactinellid sponges constituting the family Dictyospongidæ.

N. Y., 15th Ann. Rept. State Geologist, vol. i, pp. 25-26, 1897.

Gives a brief abstract of the paper.

327 —— and **Clarke** (John M.). The new species of Brachiopoda described in Paleontology of New York, Volume VIII, Parts I and II, 1892-1894.

N. Y., 14th Ann. Rept. State Geologist, pp. 325-372, 14 pls., 4 figs.; N. Y. State Mus., 48th Ann. Rept., vol. ii, pp. 325-372, 14 pls., 4 figs., 1897.

328 **Hallock** (William). Subterranean temperatures at Wheeling, West Virginia, and Pittsburg, Pennsylvania.
School of Mines Quart., vol. xviii, pp. 148–152, 2 figs., 1898.
Gives tables showing the temperatures at various depths in these wells.

329 —— [Review of "Artesian wells of Iowa," by W. H. Norton.]
Science, new ser., vol. vii, p. 499 (½ p.), 1898.

330 **Hardman** (John E.). The gold fields of Canada.
Can. Mg. Rev., vol. xvii, pp. 156–163 and 184–190, 1898.
Describes the occurrence of gold in various provinces of Canada.

331 —— Notes on some mining districts in British Columbia.
Federated Can. Mg. Inst., Jour., vol. ii, pp. 166–180, 1897.
Includes notes on the gold and silver ores of the Rossland, Nelson, Slocan Lake, and Fort Steele districts.

332 **Hardt** (Anton). The Blossburg coal region [Pennsylvania].
Mines and Minerals, vol. xix, pp. 126–128, 4 figs., 1898.
Describes briefly the occurrence of coal in the region.

333 **Harnly** (H. J.). "Cone-in-cone" (an impure calcite).
Kan. Acad. Sci., Trans., vol. xv, p. 22, 1898.
Describes occurrence of material in Cretaceous rocks of Kansas.

334 **Harris** (Gilbert D.). The Lignitic Stage, Part I. Stratigraphy and Pelecypoda.
Am. Pal., Bull., vol. ii, No. 9, pp. 3–102, 15 pls., 1897.
Reviews descriptions of the stratigraphy in various States and includes lists of references to the literature. Describes the Pelecypoda, including a number of new species.

335 **Haworth** (Erasmus). Stratigraphy of the Kansas Coal Measures.
Kan. Univ. Geol. Surv., vol. iii, pp. 13–105, pls. i–xxx, figs. 1–3, 1898.
Describes the distribution and surface features of the Mississippian series, the character, occurrence, and distribution of the subdivisions of the Coal Measures, the correlation of sections, and comparison with Missouri and Iowa Coal Measures. Discusses the nomenclature employed.

336 —— Annual Bulletin on Mineral Resources of Kansas for 1897.
Kan. Univ. Geol. Surv., 98 pp., Lawrence, Kans., 1898.
Contains statistics of production of the various economic products of the State, and notes on the occurrence and character of the lead and zinc ores, on the chemical and physical properties of Kansas coals, on the occurrence and origin of the Kansas oil and gas, on the geologic features of the gypsum beds, and on the occurrence of hydraulic cement and building stones.

337 **Hay** (O. P.). Notes on species of Ichthyodectes, including the new species I. cruentus, and on the related and herein established genus Gillicus.
Am. Jour. Sci., 4th ser., vol. vi, pp. 225–232, figs. 1–5, 1898.
Reviews previous descriptions and describes a new species and a new genus.

338 **Hayes** (C. Willard). The continental divide in Nicaragua.

Abstracts, Science, new ser., vol. viii, p. 466 (½ p.); Am. Geol., vol. xxii, pp. 253–254 (½ p.), 1898.

339 **Hedburg** (E.). Lead and zinc ores. The manner of their occurrence and their geological relation to the coal area of Missouri.

Mines and Minerals, vol. xviii, pp. 289–290, 3 figs., 1898.

Discusses the origin of the lead and zinc ore bodies.

340 **Herrick** (C. L.). The geology of the environs of Albuquerque, New Mexico.

Am. Geol., vol. xxii, pp. 26–43, pl. vi, 5 figs., 1898.

Describes the occurrence of the igneous rocks, the Carboniferous and Cretaceous strata, and the river deposits.

341 —— The occurrence of copper and lead in the San Andreas and Caballo mountains [New Mexico].

Am. Geol., vol. xxii, pp 285–291, 1 fig., 1898.

Describes their occurrence in Carboniferous rocks and discusses the origin of the ore deposits.

342 —— Papers on the geology of New Mexico.

Dennison Univ., Sci. Lab., Bull., vol. xi, pp. 75–92, pls. ix–xii, 1898.

Describes the geology of the Socorro Mountain, Limitar, and Mount Magdalena, and includes an account of the basic eruptives of the Magdalena district.

343 —— The geology of the San Pedro and the Albuquerque districts [New Mexico].

Dennison Univ., Sci. Lab., Bull., vol. xi, pp. 93–116, pl. xiii, 1898.

Describes the geologic features of the region and the occurrence of Carboniferous and Cretaceous rocks.

344 **Hershey** (Oscar H.). Notes on the geology of Jamaica.

Science, new ser., vol. viii, pp. 154–155, 1898.

Describes the occurrence of a corraline limestone.

345 —— Raised shore lines on Cape Maysi, Cuba.

Science, new ser., vol. viii, pp. 179–180, 1898.

Describes terraces on the eastern end of Cuba.

346 **Heydon** (A. Thurston). The geology of White Pass [Alaska].

Mg. and Sci. Press, vol. lxxvii, p. 133, 1898.

Describes the general geologic features of the region and the occurrence of gold.

347 **Hidden** (W. E.). Occurrence of sperrylite in North Carolina.

Am. Jour. Sci., 4th ser., vol. vi, pp. 381–383, 1898.

Describes the character, occurrence, and crystallographic characters of the material.

348 **Hidden** (W. E.) and **Pratt** (J. H.) on rhodolite, a new variety of garnet.

Am. Jour. Sci., 4th ser., vol. v, pp. 294–296; Review, Am. Nat., vol. xxxii, p. 613 (½ p.), 1898.

Describes the occurrence and chemical character of the material occurring in North Carolina.

349 —— —— Twinned crystals of zircon from North Carolina.

Am. Jour. Sci., 4th ser., vol. vi, pp. 323–326, 6 figs., 1898.

Describes crystallographic characters of the material.

350 —— —— On the associated minerals of rhodolite.

Am. Jour. Sci., 4th ser., vol. vi, pp. 463–468, 2 figs., 1898.

Describes the characters of a number of minerals associated with rhodolite in Macon County, North Carolina, and gives chemical analyses of gahnite and iolite.

351 **Hilgard** (E. W.). See **Day** (W. C.), No. 227.

352 **Hill** (Robert T.). The geological history of the Isthmus of Panama and portions of Costa Rica. Based upon a reconnaissance made for Alexander Agassiz.

Harvard Coll., Mus. of Comp. Zool., Bull., vol. xxviii, No. 5, pp. 151–285, pls. i–viii, figs. 1–24, 1898; Review by R. D. Salisbury, Jour. of Geol., vol. vi., pp. 661–668; Abstract, Am. Jour. Sci., 4th ser., vol. vi, pp. 505–508, 1898.

Describes the geologic and geographic features of the Isthmus and a section across Costa Rica. Compares the two sections. Discusses the evidences of land connections between the two oceans at different geologic periods. Includes petrographic descriptions of various specimens, by H. W. Turner.

353 —— Cuba.

Nat. Geog. Mag., vol. ix, pp. 193–242, 9 pls., 12 figs., 1898.

Includes a description of the physiographic features, geologic structure, and a geologic sketch map of the island.

354 —— The stratigraphic succession in Jamaica.

Brit. Assoc. Adv. Sci., Rept. 1897, p. 642 (½ p.), 1898.

355 —— and **Vaughan** (Thomas Wayland). Geology of the Edwards Plateau and Rio Grande Plain adjacent to Austin and San Antonio, Texas, with reference to the occurrence of underground waters.

U. S. Geol. Surv., 18th Ann. Rept., Pt. II, pp. 199–321, pls. xxi–lxiv, figs. 53–76, 1898.

Describes the physiography of the region, the character and occurrence of the Comanche and Gulf series and the Eocene strata and the occurrence of underground waters.

356 —— —— The Lower Cretaceous Gryphæas of the Texas region.

U. S. Geol. Surv., Bull., No. 151, 138 pp., pls. i–xxv, figs. 1–2; Review by W. T. Lee, Jour. of Geol., vol. vi, pp. 758–759, 1898.

Gives the history of the discovery of forms referred to Gryphæa pitcheri Morton, discusses their differentiation, and describes the geographic and stratigraphic distribution, classification and evolution of the Texas Lower Cretaceous Gryphæas, with descriptions of several species.

357 **Hill** (Robert T.) and **Vaughan** (Thomas Wayland). Nueces folio, Texas.

U. S. Geol. Surv., Geol. map of U. S., Folio No. 42, 1898.

Describes the physiography of the quadrangle and the character and occurrence of the Cretaceous, Neocene, and Pleistocene strata. Discusses the geologic history of the region and describes the occurrence of underground waters. Includes geologic and topographic maps and a sheet of columnar sections.

358 **Hille** (F.). The western Ontario gold fields and their genesis.

Federated Can. Mg. Inst., Jour., vol. ii, pp. 73-92, 3 figs., 1897.

Discusses the origin of the gold ores.

359 **Hillebrand** (W. F.). Distribution and quantitative occurrence of vanadium and molybdenum in rocks of the United States.

Am. Jour. Sci., 4th ser., vol. vi, pp. 209-216; Review, Am. Geol., vol. xxii, p. 380 (½ p.), 1898.

Gives in tabular form the amounts of these substances in a large number of rocks from various parts of the United States, describes the chemical methods employed, and gives a summary of results.

360 **Hills** (R. C.). Ore deposits of Camp Floyd district, Tooele County [Utah].

Colo. Sci. Soc., Proc., vol. v, pp. 54-65, 2 figs., 1898.

See Bibliography and Index for 1896, No. 318.

361 —— The Costillo meteorite.

Colo. Sci. Soc., Proc., vol. v, pp. 121-122, 1 pl., 1898.

See Bibliography and Index for 1896, No. 319.

362 **Hitchcock** (C. H.). The Hudson River lobe of the Laurentide ice sheet.

Abstracts, Am. Assoc. Adv. Sci., Proc., vol. xlvi, p. 292 (½ p.); Science, new ser., vol. viii, p. 467 (½p.); Am. Geol., vol. xxii, p. 255 (½ p.), 1898.

363 —— The southern lobe of the Laurentide ice sheet.

Brit. Assoc. Adv. Sci., Rept. 1897, pp. 653-654, 1898.

Contains a brief discussion of the extent of the ice sheet in northern United States.

364 **Hoffmann** (G. Christian). Report of the section of chemistry and mineralogy.

Canada Geol. Surv., new ser., vol. ix, Rept. R, 53 pp., 1898.

Includes descriptions of occurrence of various minerals and chemical analyses of rocks.

365 —— On a remarkable occurrence of xenotime.

Am. Jour. Sci., 4th ser., vol. v, p. 235 (½ p.), 1898.

Describes the characters of the mineral.

366 —— Baddeckite, a new variety of muscovite.

Am. Jour. Sci., 4th ser., vol. vi, pp. 274-275, 1898.

Describes its occurrence in Nova Scotia and its chemical analysis.

367 **Hollick** (Arthur). Notes on Block Island [Rhode Island].

N. Y. Acad. Sci., Annals, vol. xi, pp. 55-72, pls. ii-ix, 1898.

Includes notes on the geology and paleontology of the island.

368 **Hollick** (Arthur). Additions to the paleobotany of the Cretaceous formation on Staten Island [New York]. No. II.

N, Y. Acad. Sci., Annals, vol. xi, pp. 415–430, pls. xxxvi–xxxviii, 1898.

Describes the relations of the Cretaceous strata and illustrates and describes some of the fossil plants.

369 —— Geological notes. Long Island and Block Island.

N. Y. Acad. Sci., Trans., vol. xvi, pp. 9–18, 1898.

Describes results of a study of the Cretaceous deposits and gives lists of fossils collected.

370 —— The Cretaceous clay marl exposure at Cliffwood, New Jersey.

N. Y. Acad. Sci., Trans., vol. xvi, pp. 124–134, pls. xi–xiv, 1898.

Discusses the stratigraphic relations and describes some of the fossils collected.

371 —— Further notes on Block Island. Geology and botany.

Am. Geol., vol. xxi, pp. 200–201 (½ p.), 1898.

Contains summary of paper read before the New York Academy of Sciences.

372 — The age of the Amboy clay series, as indicated by its flora.

Abstracts: Am. Assoc. Adv. Sci., Proc., vol. xlvii, pp. 292–293; Science, new ser., vol. viii, pp. 467–468; Am. Geol., vol. xxii, pp. 255–256, 1898.

373 —— Further notes on Block Island. Geology and botany.

Abstract, Science, new ser., vol. vii, pp. 178–179, 1898.

Summary of paper read before the New York Academy of Sciences.

374 —— Some features of the drift on Staten Island, New York.

Abstracts, Science, new ser., vol. viii, p. 463 (½ p.); Am. Geol., vol. xxii, p. 249 (½ p.), 1898.

375 —— Notes on the glacial phenomena of Staten Island [New York].

Science, new ser., vol. viii, p. 840 (½ p.), 1898.

Contains summary of paper read before the New York Academy of Sciences.

375*a* —— See **Newberry** (J. S.), No. 573*a*.

376 **Hopkins** (Thomas C.). Concentric weathering in sedimentary rocks.

Geol. Soc. Am., Bull., vol. ix, pp. 427–428, pls. 27–29; Abstract, Science, new ser., vol. vii, p. 84 (9 l.), 1898.

Describes weathering of sedimentary rocks along the Ohio River.

377 —— Some feldspars in serpentine, southeastern Pennsylvania.

Abstracts, Am. Assoc. Adv. Sci., Proc., vol. xlvii, pp. 293–294 (½ p.); Science, new ser., vol. viii, p. 468 (13 l.); Am. Geol., vol. xxii, p. 256 (9 l.), 1898.

Describes occurrence of feldspars and associated minerals in serpentine.

378 —— Fire clays.

Mines and Minerals, vol. xix, pp. 53–55, 1 fig., 1898.

Describes the characters of fire clay and its occurrence in Pennsylvania.

379 **Horsewill** (T. J.). Tesla coal mines [Alameda County, California].

Mines and Minerals, vol. xix, pp. 145-147, 5 figs., 1898.

Describes the occurrence of coal.

380 **Hosea** (R. M.). Anthracite in the Rockies.

Mines and Minerals, vol. xviii, pp. 529-533, 5 figs.; vol. xix, pp. 7-9, 2 figs., 1898.

Describes occurrence of anthracite coal in Colorado.

380*a* **Hovey** (E. O.). Catalogue of the meteorites in the collection of the American Museum of Natural History to July, 1896.

Am. Mus. Nat. Hist., Bull., vol. viii, pp. 149-155, 1896.

380*b* —— Notes on the artesian well sunk at Key West, Florida, in 1895.

Harvard Coll., Mus. Comp. Zoöl., Bull., vol. xxviii, pp. 65-91; Abstract, Am. Geol., vol. xviii, p. 218, 1896.

381 —— See **Whitfield** (R. P.), No. 877.

382 **Hull** (Edward). Prof. J. W. Spencer on changes of level in Mexico.

Geol. Mag., dec. iv, vol. v, pp. 193-195, 1898.

Reviews recent papers by J. W. Spencer.

I.

383 **Iddings** (Joseph P.). On rock classification.

Jour. of Geol., vol. vi, pp. 92-111, 6 figs.; Review, Am. Nat., vol. xxxii, pp. 465-466, 613-614; Abstract, Science, new ser., vol. vii, pp. 83-84 (½ p.), 1898.

Discusses the nature and characteristics of rocks, the results of the study of the chemical composition of igneous rocks, and the chemical relations and nature of rocks genetically connected.

384 —— Chemical and mineral relationships in igneous rocks.

Jour. of Geol., vol. vi, pp. 219-237, pls. ix-x; Review, Am. Geol., vol. xxii, p. 381 (½ p.), 1898.

Discusses the occurrence of quartz, and of leucite and nephelite in igneous rocks, the interdependence of various minerals, and the chemical composition of the magma.

385 —— [Review of "Volcanoes of North America: A reading lesson for students of geography and geology," by Israel C. Russell.]

Jour. of Geol., vol. vi, pp. 434-435, 1898.

386 —— Bysmaliths.

Jour. of Geol., vol. vi, pp. 704-710, 1 fig., 1898.

Applies the term to an intruded plug or core of igneous rock. Describes their manner of occurrence and refers to certain examples.

387 —— [Review of "A text-book of mineralogy, with an extended treatise on crystallography and physical mineralogy," by E. S. Dana.]

Jour. of Geol., vol. vi, pp. 756-757, 1898.

388 **Iddings** (Joseph P.). [Review of "Manual of determinative mineralogy with an introduction on blowpipe analysis," by George J. Brush.]

Jour. of Geol., vol. vi, pp. 757-758, 1898.

389 —— See **Diller** (J. S.), No. 234.

390 **Irving** (J. D.). Contact-metamorphism of the Palisades diabase.

Am. Geol., vol. xxi, p. 398 (½ p.); Science, new ser., vol. vii, p. 683 (½ p.), 1898.

Contains summary of paper read before the New York Academy of Sciences.

J.

391 **Jaggar** (T. A., jr.). Some conditions affecting geyser eruptions.

Am. Jour. Sci., 4th ser., vol. v, pp. 323-333, 1 fig. Abstract, Nature, vol. lviii, pp. 261-263, 1898.

Describes geyser phenomena of the Yellowstone National Park and the results of certain experiments. Discusses their bearing on the question of the cause of the various phases of geyser activity.

392 —— An occurrence of acid pegmatite in diabase.

Am. Geol., vol. xxi, pp. 203-213, pl. xiv, 1898.

Describes rocks from the Boston Basin.

393 **Jefferson** (M. S. W.). The postglacial Connecticut, at Turners Falls, Massachusetts.

Jour. of Geol., vol. vi, pp. 463-472, 7 figs., 1898.

Describes the changes of drainage and the postglacial history of the vicinity.

394 **Jennison** (W. F.). Manganese deposits of Nova Scotia.

Federated Can. Mg. Inst., Jour., vol. iii, pp. 167-172, 1898.

Gives a brief sketch of the manganese deposits of Nova Scotia.

395 **Jones** (A. W.). The Mentor beds.

Kan. Acad. Sci. Trans., vol. xv, pp. 111-112, 1898.

Describes the general character and occurrence of the beds in the Lower Cretaceous and gives a list of fossils.

396 **Jones** (Lee H.). The upper limit of the Knobstone in the region of Borden, Indiana.

Ind. Acad. Sci., Proc., 1897, pp. 257-258, 1898.

Describes the areal extent of the group in the region.

397 **Jones** (T. Rupert). On some Triassic (?) Estheriæ from the Red beds or Cimarron series of Kansas.

Geol. Mag., dec. iv, vol. v, pp. 291-293, 1898.

Gives brief notes on some specimens.

398 **Jopling** (James E.). The Marquette Range. Its discovery, development, and resources.

Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 541-555, figs. 1-11, 1898.

Includes brief notes on the iron ore bodies and cross sections.

399 —— See **Birkinbine** (John), No. 78.

400 **Joseph** (M. H.). The Republic mine [Washington].

Eng. and Mg. Jour., vol. lxvi, pp. 545–546, 2 figs., 1898.

Includes notes on the occurrence of gold and silver.

401 **Julien** (A. A.). The elements of strength and weakness in building stones.

Am. Geol., vol. xxi, pp. 397–398; Science, new ser., vol. vii, p. 683 (½ p.), 1898.

Contains summary of paper read before the New York Academy of Sciences.

K.

402 **Keith** (Arthur), **Darton** (N. H.) and. On dikes of felsophyre and basalt in Paleozoic rocks in central Appalachian Virginia.

See Darton (N. H.) and Keith (A.), No. 198.

403 **Kemp** (James Furman). The geology of the magnetites near Port Henry, New York, and especially those of Mineville.

Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 146–203, pls. i–ix, figs. 1–12, 1898.

Describes the general geologic features of the region, the occurrence, character, chemical composition, relations, and origin of the nontitaniferous ore bodies. Includes a bibliography of the subject.

404 —— The geology of Moriah and Westport townships, Essex County, New York, with a geologic map.

N. Y. State Mus., 48th Ann. Rept., vol. i, Appendix, pp. 325–355, 3 pls., 5 figs., and geologic map, 1897.

See Bibliography and Index for 1895, No. 245.

405 —— Preliminary report on the geology of Essex County [New York].

N. Y., 15th Ann. Rept. State Geologist, vol. i, pp. 22–23, 575–614, pls. i–xii, 2 figs., 1897.

Describes the occurrence and distribution of the igneous, Cambrian, and Silurian rocks in the several townships, and includes notes on the iron ores.

406 —— Geology of the Lake Placid region [New York].

N. Y. State Mus., Bull., vol. v, No. 21, pp. 51–67, 1 pl., and geologic map, 1898.

Describes the character and age of the crystalline rocks and the glacial features of the region.

407 —— [Geology and its relations to topography.]

Am. Soc. Civil Engrs., Trans., vol. xxxix, pp. 79–82, 1898.

In discussion of paper by John C. Branner on the same subject, describes the topography of the vicinity of New York.

408 —— The glacial or postglacial diversion of the Bronx River [New York] from its old channel.

N. Y. Acad. Sci., Trans., vol. xvi, pp. 18–24, 1 fig., 1898.

Discusses the recent geologic history of this river.

409 **Kemp** (James Furman). Some remarks on titaniferous magnetites.
Am. Geol., vol. xxii, p. 62 (½ p.), 1898.
Contains summary of paper read before the New York Academy of Sciences.

410 —— [Abstracts of papers read before the Geological Society of America at the Montreal meeting, December, 1897.]
Science, new ser., vol. vii, pp. 48–53, 79–85, 1898.

411 —— [Review of "The Marquette iron-bearing district of Michigan, with atlas," by C. R. Van Hise and W. S. Bayley.]
Science, new ser., vol. vii, pp. 137–138, 1898.

412 —— Minerals of the copper mines at Ducktown, Tennessee.
Science, new ser., vol. viii, pp. 839–840, (½ p.), 1898.
Contains summary of paper read before the New York Academy of Sciences.

413 —— Geological occurrence and associates of the telluride gold ores.
The Mineral Industry, 1897, pp. 295–320, 1898.
Refers to occurrence of telluride ores in the United States and other countries and gives list of papers describing such occurrences.

414 **Kennedy** (J. C.). The Wyoming copper region.
Eng. and Mg. Jour., vol lxvi, pp. 640–641, 1 fig., 1898.
Describes the general geology of the locality in southern Wyoming and the occurrence of copper.

415 **Keyes** (Charles R.). The geological occurrence of clays.
Mo. Geol. Surv., vol. xi, pp. 35–48, 1896.
Describes the occurrence of clay in the various geologic formations of Missouri.

416 —— The use of local names in geology.
Jour. of Geol., vol vi, pp. 161–170, 1898.
Discusses the general principles of geologic nomenclature and the use of local names in stratigraphy.

417 —— [Contribution to "A symposium of the classification and nomenclature of geologic time divisions."]
Jour. of Geol., vol. vi, pp. 347–352, 1898.

418 —— Probable stratigraphical equivalents of the Coal Measures of Arkansas.
Jour. of Geol., vol. vi, pp. 356–365, 2 figs., 1898.
Describes the sequence of the Coal Measures of Arkansas and discusses their relations with the Des Moines and Missourian series.

419 —— [Review of recent papers on the stratigraphy of the southern Ozarks.]
Jour. of Geol., vol. vi, pp. 652–658, 1898.

420 **Keyes** (Charles R.) The genetic classification of geological phenomena.
Jour. of Geol., vol. vi, pp. 809–815, 1898.
Discusses previous attempts to form a genetic classification and gives a table showing the classification of geologic phenomena by genesis.

421 —— [Review of "Batesville sandstone of Arkansas," by Stuart Weller.]
Am. Geol., vol. xxi, pp. 129–131, 1898.

422 —— [Review of "Geology of Massanutten Mountain in Virginia," by A. C. Spencer.]
Am. Geol., vol. xxi, pp. 191–192, 1898.

423 —— Use of the term Augusta in geology.
Am. Geol., vol. xxi, pp. 229–235, 1898.
Discusses the nomenclature of the Mississippian series.

424 —— Carboniferous formations of southwestern Iowa.
Am. Geol., vol. xxi, pp. 346–350, 1898.
Gives a brief description of the subdivisions of the Missourian series exposed in this portion of the State.

425 —— Remarks on the classification of the Mississippian series.
Am. Geol., vol. xxii, pp. 108–113, 1898.
Discusses the use of the terms Osage and Augusta, as subdivisions of the Mississippian series.

426 —— [Review of "Occurrence of fossil fishes in the Devonian of Iowa," by Charles R. Eastman.]
Am. Geol., vol. xxii, pp. 237–239, 1898.

427 —— [Review of "The special report on Kansas coal," by Erasmus Haworth and W. R. Crane.]
Am. Geol., vol. xxii, pp. 384–388, 1898.

428 —— Eolian origin of the loess.
Am. Jour. Sci., 4th ser., vol. vi, pp. 299–304, 1898.
Discusses the origin of the loess of the Mississippi Valley.

429 —— Geographic development of the Crimea.
Iowa Acad. Sci., Proc., vol. v, pp. 52–54, 5 figs., 1898.
Includes a brief statement of the method of stratigraphic correlation termed orotaxis and of the relations of grade plain and great plane of sedimentation.

430 —— Carboniferous formations of the Ozark region.
Iowa Acad. Sci., Proc., vol. v, pp. 55–58, 1898.
Describes the general relations of the formations in the Ozark region and gives a table of correlation.

431 —— Some geological formations of the Cap-au-Gres uplift [Missouri].
Iowa Acad. Sci., Proc., vol. v, pp. 58–63, pls. i–iii, 1898.
Describes a fault at the locality, the general geologic section, and names and describes a number of new formations.

432 **Keyes** (Charles R.). Modern stratigraphical nomenclature.

Science, new ser., vol. vii, pp. 571–572, 1898.

Discusses some principles of stratigraphic nomenclature.

433 —— The myth of the Ozark Isle.

Science, new ser., vol. vii, pp. 588–589, 1898.

Gives a summary of the geologic history of the Ozark region.

434 —— The principal Missourian section.

Abstracts, Science, new ser., vol. viii, p. 464 (½ p.); Am. Geol., vol. xxii, p. 251 (½ p.), 1898.

435 —— Structure of the coal deposits of the trans-Mississippian field.

Eng. and Mg. Jour., vol. lxv, pp. 253–254 and 280–281; Review, Zeit für prak. geol, 1898, heft 5, pp. 169–171, 1898.

Describes the general character of the rocks, the structure of the coal region and the occurrence and character of the coal beds.

436 **Killebrew** (J. B.). Mining Tennessee phosphates.

Abstract, Eng. and Mg. Jour., vol. lxvi, p. 68 (½ p.), 1898.

Includes notes on the occurrence of the phosphate deposits of Tennessee.

437 **Kimball** (James P.). Residual concentration by weathering as a mode of genesis of iron ores.

Am. Geol., vol. xxi, pp. 155–163, 1898.

Describes iron ores occurring in Washington and discusses the origin of such deposits.

438 **Kindle** (Edward M.). A catalogue of the fossils of Indiana, accompanied by a bibliography of the literature relating to them.

Ind. Dept. of Geol. and Nat. Res., 22d Ann. Rept., pp. 407–514, 1898.

Gives a list of fossils and their geologic occurrence and a bibliography arranged alphabetically by authors' names.

439 **King** (Francis P.), **McCallie** (S. W.), **Yeates** (W. S.), and. A preliminary report on a part of the gold deposits of Georgia.

See Yeates (W. S.), McCallie (S. W.), and King (F. P.), No. 941.

440 **Kirby** (E. B.). The gold-ore deposits of Mount Caribou, Idaho.

Colo. Sci. Soc., Proc., vol. v, pp. 72–75, 1898.

Describes the ore bodies and discusses their origin.

441 —— [Occurrence of ore chutes].

Colo. Sci. Soc., Bull., No. 10, pp. 5–6, 1898.

Describes the occurrence of two ore chutes.

442 **Kirchner** (Walter C. G.). Contribution to the fossil flora of Florissant, Colorado.

St. Louis Acad. Sci., Trans., vol. viii, pp. 161–188, pls. xi–xv, 1898.

Gives a list of plants previously described and describes several new species. Includes a bibliography.

443 **Knapp** (S. A.). Occurrence and treatment of the carbonate of soda deposits of the Great Basin.
Mg. and Sci. Press., vol. lxxvii, p. 448, 1898.
Describes the occurrence and character of the soda deposits in western Nevada.

444 **Knight** (F. C.). A suspected new mineral from Cripple Creek [Colorado].
Colo. Sci. Soc., Proc., vol. v, pp. 66–71, 1898.
See Bibliography and Index for 1896, No. 412.

445 **Knight** (Wilbur C.). Some new Jurassic vertebrates from Wyoming. First paper.
Am. Jour. Sci., 4th ser., vol. v, p. 186, 2 figs., 1898.
Describes two new species of Ceratodus.

446 —— Some new Jurassic vertebrates from Wyoming. Second paper.
Am. Jour. Sci., 4th ser., vol. v, pp. 378–381, 3 figs., 1898.
Describes a new genera and species, Megalneusaurus rex.
Suggests the name Como group for the beds in which the fossil occurs.

447 —— The building stones and clays of Wyoming.
Eng. and Mg. Jour., vol. lxvi, pp. 546–547 (½ p.), 1898.
Includes brief notes on their occurrence.

448 —— The natural soda deposits of Wyoming.
The Mineral Industry, 1897, pp. 612–616, 2 figs., 1898.
Describes the occurrence and character of the soda deposits.

449 —— See **Oliphant** (F. H.), No. 580.

450 **Knowlton** (Frank Hall). A catalogue of the Cretaceous and Tertiary plants of North America.
U. S. Geol. Surv., Bull., No. 152, 247 pp., 1898.
Gives a list of North American works and papers consulted, an alphabetic list of Cretaceous and Tertiary plants, with reference to the original date and place of publication of each genus, synonym, and geographic and geologic distribution.

451 —— [Fossil plants from San Pablo formation, California.]
Jour. of Geol., vol. vi, p. 498, 1898.
Gives list of plants determined and considers them of Pliocene age.

452 —— [Description of Pityoxylon hollicki n. sp.]
N. Y. Acad. Sci., Trans., vol. xvi, pp. 234–236, 2 figs., 1898.

453 —— The Belly River horizon on the Upper Missouri.
Science, new ser., vol. vii, p. 429 (½ p.), 1898.
Contains summary of paper read before the Geological Society of Washington.

454 —— The standing fossil forests of the Yellowstone National Park.
The Plant World, vol. i, pp. 53–55, pl. 1, 1898.
Describes the general features of the fossil forests.

455 **Knowlton** (Frank Hall). In a coal swamp.

The Plant World, vol. ii, pp. 21-23, 1 pl., 1898.

Gives a brief account of the plants of the Coal Measures.

456 **Kümmel** (Henry B.). The Newark system or Red Sandstone belt [New Jersey].

N. J. Geol. Surv., Ann. Rept., 1898, pp. 23-159, pls. ii-ix, figs. 1-25, 1898.

Describes the character, occurrence, and structure of the sedimentary and trap rocks and metamorphosed shales and their economic resources within the State.

457 —— The age of the artifect-bearing sand at Trenton [New Jersey].

Science, new ser., vol. vii, pp. 115-117, 1898.

Discusses the age and origin of the sand.

458 **Kunz** (George F.). Meteoric stone from Andover [Maine].

Science, new ser., vol. viii, p. 840 (½ p.), 1898.

Contains summary of paper read before the N. Y. Academy of Sciences.

L.

459 **Ladd** (George E.). Geological phenomena resulting from the surface tension of water.

Am. Geol., vol. xxii, pp. 267-285, pl. viii, 1898.

Discusses phenomena produced by capillary flocculation and floating of materials.

460 **Lakes** (Arthur). The geology of Aspen and the conditions existing in the Smuggler mine at the time of the fire [Colorado].

Mines and Minerals, vol. xviii, pp. 251-253, 3 figs., 1898.

Describes the general geologic features of the region.

461 —— Silver Cliff district [Colorado].

Mines and Minerals, vol. xviii, pp. 296-297, 3 figs., 1898.

Describes the occurrence of the gold and silver ore bodies.

462 —— Volcanic craters. Real and false craters and their relation to mining and ore deposits.

Mines and Minerals, vol. xviii, pp. 321-322, 2 figs., 1898.

Discusses the occurrence of volcanic vents in Colorado.

463 —— Rosita and Silver Cliff [Colorado].

Mines and Minerals, vol. xviii, pp. 344-346, 5 figs., 1898.

Describes the occurrence of the silver-lead ores of the region.

464 —— Telluride ores.

Mines and Minerals, vol. xviii, pp. 369-370, 1898.

Describes the character and occurrence of some of the telluride ore deposits of Colorado.

465 —— Prospecting experiences.

Mines and Minerals, vol. xviii, pp. 398-400, 4 figs., 1898.

Describes geologic features about Salida and Rosita, Colorado.

466 **Lakes** (Arthur). The El Paso coal field [Colorado].
Mines and Minerals, vol. xviii, pp. 483–484, 2 figs., 1898.
Describes the occurrence of coal north of Colorado Springs, Colorado.

467 —— The fluorine mine [Cripple Creek, Colorado.].
Mines and Minerals, vol. xviii, pp. 489–491, 7 figs., 1898.
Describes the occurrence of the igneous rocks of the region and the occurrence of gold.

468 —— Ore occurrence in the Red Mountain district, Colorado.
Mines and Minerals, vol. xviii, pp. 513–514, 1898.
Describes the occurrence of the silver and copper ores of the region.

469 —— Tellurium and the telluride ores.
Mines and Minerals, vol. xviii, pp. 533–535, 1 fig., 1898.
Describes the general characters of the telluride ores of Colorado.

470 —— A peculiar ore body.
Mines and Minerals, vol. xviii, p. 558, 1898.
Quotes a description of the Ann Lee Mine, Cripple Creek, Colorado, by R. A. F. Penrose, jr.

471 —— Ores of the Vulcan mine [Colorado].
Mines and Minerals, vol. xviii, pp. 562–563, 1 fig., 1898.
Describes occurrence of gold ores in Gunnison County, Colorado.

472 —— Mount Caribou gold deposits [Idaho]
Mines and Minerals, vol. xix, pp. 55–56, 2 figs., 1898.
Describes the occurrence and origin of the ore deposits

473 —— The Wyoming oil fields.
Mines and Minerals, vol. xix, p. 80, 1 fig., 1898.
Describes the occurrence of oil in the Salt Creek field.

474 **Landes** (Henry). The Den Pree lode, Washington.
Eng. and Mg. Jour., vol. lxv, pp. 39–40, 3 figs., 1898.
Describes the occurrence of gold in the Cascade range of Washington.

475 **Lane** (A. C.). Magmatic differentiation in the rocks of the copper-bearing series.
Abstracts, Science, new ser., vol. viii, p. 465 (½ p.); Am. Geol., vol. xxii, p. 251 (½ p.), 1898.

476 —— Note on a method of stream capture.
Abstracts. Science, new ser., vol. viii, p. 465 (½ p.); Am. Geol., vol. xxii, p. 252 (½ p.), 1898.

477 **Lawson** (William), **Ellis** (W. Hodgson) and. Chemical notes on the so-called Sudbury coal [Ontario].
See Ellis (W. H.) and Lawson (W.), No. 252.

478 **Le Conte** (Joseph). [Contributions to "A symposium of the classification and nomenclature of geologic time divisions.]"
Jour. of Geol., vol. vi, pp. 337–338, 1898.

479 **Lee** (Harry A.). Report of the State Bureau of Mines for the year 1897 [Colorado].

Denver, Colo., 167 pp., 1898.

Describes the character, occurrence, and production in 1897 of the economic mineral products of the various counties of Colorado.

480 **Lee** (W. T.). [Review of "The Lower Cretaceous Gryphæas of the Texas region," by R. T. Hill and T. W. Vaughan].

Jour. of Geol., vol. vi, pp. 758–759, 1898.

481 **Leidy** (Joseph). Fossil vertebrates from the Alachua clays of Florida.

Wagner Free Inst. of Sci., Trans., vol. iv, pp. 61, pls. i–xix, 1896.

Describes the localities and the material obtained. Includes notes by F. A. Lucas and W. H. Dall.

482 **Leith** (C. K.). Summaries of current North American pre-Cambrian literature.

Jour. of Geol., vol. vi, pp. 527–541, 739–753, and 840–854, 1898.

483 **Leonard** (A. G.). Geology of Dallas County [Iowa].

Iowa Geol. Surv., vol. viii, pp. 53–118, pls. iv–vi, figs. 1–8, and geologic map, 1898.

Describes the physiography, the occurrence and character of the Carboniferous and Pleistocene formations, and the occurrence of coal, clay, building stone, road material, and natural gas.

484 —— **Bain** (H. F.) and. The Middle Coal Measures of the western interior coal fields.

See Bain (H. F.) and Leonard (A. G.), No. 45.

485 **Leverett** (Frank). The Peorian soil and weathered zone (Toronto formation?).

Jour of Geol., vol. vi, pp. 244–249, 1898.

Describes the occurrence of the formation and its bearing on the evidence of deglaciation within the glacial period.

486 —— Correlation of moraines with beaches on the border of Lake Erie.

Am. Geol., vol. xxi, pp. 195–199, 1898.

Reviews some of the researches on the glacial phenomena of the region.

487 —— The weathered zone (Sangamon) between the Iowan loess and Illinoian till sheet.

Iowa Acad. Sci., Proc., vol. v, pp. 71–80, pl. iv; Jour. of Geol., vol. vi, pp. 171–181; Abstract, Am. Geol., vol. xxi, pp. 254–255, 1898.

Describes the distribution of the loess and till sheet and the character of the Sangamon soil horizon which occurs between them.

488 —— The weathered zone (Yarmouth) between the Illinoian and Kansas till sheets.

Iowa Acad. Sci., Proc., vol. v, pp. 81–86; Jour. of Geol., vol. vi, pp. 238–243; Abstract, Am. Geol., vol. xxi, p. 254 (½ p.), 1898.

Describes the character and occurrence of the Yarmouth zone in Iowa.

489 **Levy** (Louis Edward). See Cabrera (R.), No.117.

490 **Lincoln** (D. F.). Report on the structural and economic geology of Seneca County [New York].

N. Y. 14th Ann. Rept. State Geolgist, pp. 60–125, pls. 1–19, 12 figs; N. Y. State Mus. 48th Ann. Rept., vol. ii, pp. 60–125, pls. 1–19, 12 figs., 1897; Review by Stuart Weller, Jour. of Geol., vol. vi, pp. 205–206 (½ p.), 1898.

Decribes the glacial phenomena of the region, the occurrence and character of the Silurian and Devonian strata, and of the economic products. Includes a list of papers on the region.

491 **Lindgren** (Waldemar). The mining districts of the Idaho Basin and the Boise Ridge, Idaho. With a report on the fossil plants of the Payette formation by Frank Hall Knowlton.

U. S. Geol Surv., 18th Ann. Rept., Pt. III, pp. 625–736, pls. lxxxvii–cii, figs. 55–65, 1898.

Describes the general geologic history and the occurrence and character of the ore deposits and of the Tertiary and Pleistocene strata, and includes a report on the fossil plants of the Payette formation.

492 —— Boise folio, Idaho.

U. S. Geol. Surv., Geol. Atlas of the U. S., Folio No. 45, 1898.

Describes the geologic and physiographic features of the quadrangle, the character and occurrence of the Tertiary, Pleistocene, and igneous rocks, and the occurrence of gold-bearing gravels and veins, coal, building stones, and artesian waters. Includes topographic and geologic maps and structure sections.

493 —— Orthoclase as gangue mineral in a fissure vein.

Am. Jour. Sci., 4th ser., vol. v, pp. 418–420, Mg. and Sci. Press, vol. lxxvii, p. 32, 1898.

Describes occurrence of orthoclase in ore deposits and discusses its origin.

494 —— The canyons of the Salmon and Snake rivers [Idaho].

Abstracts, Science, new ser., vol. vii, pp. 71–72; Eng. and Mg. Jour., vol. lxv, p. 158 (½ p.), 1898.

Describes the general physiographic features of the region. Comprises summary of paper read before the Geological Society of Washington.

495 —— The primary gold deposits of the Sierra Nevada.

Mg. and Sci. Press, vol. lxxvi, pp. 258–259, 1898.

Describes the occurrence and character of the ore deposits and discusses their origin.

496 —— See **Diller** (J. S.), No. 234.

497 **Linton** (Edward). On the formation of new ravines.

Am. Geol., vol. xxi, pp. 329–330, 1898.

Describes the formation of gullies in the deforested areas of the South, with special reference to a particular locality.

498 **Logan** (W. N.). The invertebrates of the Benton, Niobrara, and Ft. Pierre Cretaceous.

Kan. Univ. Geol. Surv., vol. iv, pp. 431–583, pls. lxxxvi–cxx, 1898.

499 **Lord** (E. C. E.). On the dikes in the vicinity of Portland, Maine.
Am. Geol., vol. xxii, pp. 335–346, pl. x, 1898.
Describes the Glacial phenomena of the region and the occurrence and petrographic character of the dike rocks.

500 **Low** (A. P.). Report on a traverse of the northern part of the Labrador peninsula from Richmond Gulf to Ungava Bay.
Canada Geol. Surv., new ser., vol. ix, Rept. L, 43 pp., 4 pls., 1898.
Describes the drainage and physical features and the occurrence and character of the Laurentian and Cambrian rocks and Glacial phenomena.

501 **Lucas** (F. A.). Contributions to paleontology.
Am. Jour. Sci., 4th ser., vol. vi, pp. 399–400, 1898.
Describes a new genus and species of crocodile and a new species of Dinictis.

502 —— See **Leidy** (Joseph), No. 481.

503 **Lukis** (Ernest du B.). A new copper deposit in Mexico.
Eng. and Mg. Jour., vol. lxv, pp. 279–280, 2 figs., 1898.
Describes occurrence in the State of Puebla.

504 **Luther** (D. Dana). The stratigraphic position of the Portage sandstones in the Naples Valley and the adjoining region [New York].
N. Y., 15th Ann. Rept., State Geologist, vol. i, pp. 13–14, 227–236, pls. i–ii, and geologic map, 1897; N. Y. State Mus. 49th Ann. Rept., vol. ii, pp. 227–236, pls. i–ii, and geologic map, 1898.
Describes the lithologic and faunal characters of the Portage sandstones of the region.

505 —— The economic geology of Onondaga County [New York].
N. Y., 15th Ann. Rept., State Geologist, vol. i, pp. 14–16, 241–303, pls. i–xxi, figs. 1–12, 1897; N. Y. State Mus. 49th Ann. Rept., vol. ii, pp. 241–303, pls. i–xxi, figs. 1–12, 1898.
Describes the character and occurrence of the Silurian, Devonian and Pleistocene formations and the occurrence of salt, gypsum, building stone and cement.

506 **Lyman** (Benjamin Smith). Some illustrations of the influence of geological structure on topography.
Franklin Inst., Jour., vol. cxlv, pp. 355–360, 4 pls., 1898.
Describes a portion of the Punjab salt range and observes similar effects in Appalachian topography.

507 —— Copper traces in Bucks and Montgomery counties [Pennsylvania].
Franklin Inst., Jour., vol. cxlvi, pp. 416–423, with map, 1898.
Describes the occurrence and the character of the formation in which they occur.

508 —— [Geology and its relation to topography.]
Am. Soc. Civil Engrs., Trans., vol. xxxix, pp. 82–94, pl. ii, 1898.
In discussion of paper by John C. Branner on the same subject.

M.

509 **Mabry** (T. O.). The brown or yellow loam of north Mississippi and its relation to the northern drift.

Jour. of Geol., vol. vi, pp. 273-302, 2 figs., 1898.

Describes the character, relations, and distribution of the brown or yellow loam, its relation to the Lafayette and Loess formations, and discusses the origin and age of the Loess loam.

510 **McCallie** (S. W.). A preliminary report on a part of the phosphates and marls of Georgia.

Ga. Geol. Surv., Bull. No. 5-A, 98 pp., 3 pls., 6 figs., 1896.

Describes the general distribution of phosphates and the occurrence, character, and distribution of the Georgia phosphates. Discusses the origin of phosphates.

511 —— **King** (F. P.), and **Yeates** (W. S.). A preliminary report on a part of the gold deposits of Georgia.

See Yeates (W. S.), McCallie (S. W.), and King (F. P.), No. 941.

512 **McCalley** (Henry). See **Birkinbine** (John), No. 78.

513 **McCharles** (A.). Nickel mining in the Sudbury district [Canada].

The Mineral Industry, 1897, pp. 501-503, 1898.

Includes brief notes on the occurrence of nickel.

514. **McClung** (C. E.). Microscopic organisms of the Upper Cretaceous.

Kan. Univ. Geol. Surv., vol. iv, pp. 413-429, pl. lxxxv, 1898.

Gives a general description of the forms occurring in the Upper Cretaceous chalk of Kansas, with a description of several species, including one new one.

515 **McGee** (W J). Geographic development of the District of Columbia.

Nat. Geog. Mag., vol. ix, pp. 317-323, 1898.

Describes the geologic and geographic history of the region.

515*a* **Madeira** (George). See **Day** (W. C.), No. 227.

516 **Maguire** (Don). Gold mines of Mercur [Utah].

Mines and Minerals, vol. xix, pp. 81-83, 2 figs., 130-131, 1898.

Describes the occurrence of the ore bodies of the region.

517 **Marbut** (Curtis Fletcher). Geology of the Clinton sheet [Missouri].

Mo. Geol. Surv., vol. xii, Pt. II, pp. 20-104, 6 figs., and geologic map and cross sections, 1898.

Describes the physiographic features, the character, occurrence, and relations of the subdivisions of the Carboniferous formations, and the occurrence of the economic products of the region.

518 —— Geology of the Calhoun sheet [Missouri].

Mo. Geol. Surv., vol. xii, Pt. II, pp. 108-191, figs. 7-17, and geologic map and cross sections, 1898.

Describes the physiographic features, the character of the subdivisions of the Carboniferous and Silurian formations, the geologic structure, and the occurrence of coal, clay, building stones, and lime.

519 **Marbut** (Curtis Fletcher). Geology of the Lexington sheet [Missouri].

Mo. Geol. Surv., vol. xii, Pt. II, pp. 196–247, figs. 18–23, and geologic map and cross sections, 1898.

Describes the physiographic features, the occurrence and character of the Carboniferous and Pleistocene formations and the occurrence of coal, building stones, and clays.

520 —— Geology of the Richmond quadrangle, including portions of Ray and Carroll counties [Missouri].

Mo. Geol. Surv., vol. xii, Pt. II, pp. 252–308, figs. 24–29, and geologic map and cross sections, 1898.

Describes the physiographic features of the region, the character and occurrence of the Carboniferous and Pleistocene formations, and the occurrence of coal, building stones, and clays.

521 —— Geology of the Huntsville quadrangle, including portions of Randolph, Howard, and Chariton counties [Missouri].

Mo. Geol. Surv., vol. xii, Pt. II, pp. 312–371, figs. 30–37, and geologic map, 1898.

Describes the physiography, the occurrence and character of the Carboniferous and Pleistocene formations, and the occurrence of coal and clays.

522 —— Cote sans Dessein and Grand Tower [Missouri].

Am. Geol., vol. xxi, pp. 86–90, pl. x; Review by W. M. Davis, Science, new ser., vol. vii, p. 273 (½ p.), 1898.

Describes the character and origin of certain physiographic features.

523 **Marsh** (O. C.). New species of Ceratopsia.

Am. Jour. Sci., 4th ser., vol. vi, p. 92, 1898.

Describes two new species from the Ceratops beds.

524 —— Jurassic formation on the Atlantic coast. Supplement.

Am. Jour. Sci., 4th ser., vol. vi, pp. 105–115, 1 fig.; Abstract, Science, new ser., vol. viii, pp. 145–154, 1898.

Discusses a number of reviews of a former paper on this subject.

525 —— Cycad horizons in the Rocky Mountain region.

Am. Jour. Sci., 4th ser., vol. vi, p. 197, 1898.

Gives a brief account of their occurrence in the Black Hills.

526 —— The value of type specimens and the importance of their preservation.

Am. Jour. Sci., 4th ser., vol. vi, pp. 401–405; Geol. Mag., dec. iv, vol. v, pp. 548–552, 1898.

527 —— The origin of mammals.

Am. Jour. Sci., 4th ser., vol. vi, pp. 406–409; Science, new ser., vol. viii, pp. 953–955, 1898.

528 —— The comparative value of different kinds of fossils in determining geological age.

Abstract, Am. Jour. Sci., 4th ser., vol. vi, pp. 483–486; Geol. Mag., dec. iv, vol. v, pp. 565–568, 1898.

529 **Marsh** (O. C.). On the families of Sauropodous Dinosauria.
Am. Jour. Sci., 4th ser., vol. vi, pp. 487–488, 1898.
Gives a brief summary of the characters that distinguish the Sauropoda.

530 **Martin** (G. C.). On occurrence of dunite in western Massachusetts.
Am. Jour. Sci., 4th ser., vol. vi, pp. 244–248, 1 fig.; Review, Am. Geol., vol. xxii, p. 380 (10 l.), 1898.
Describes the occurrence, field and structural relations, and the petrographic and chemical characters.

531 **Mathews** (Edward B.). An account of the character and distribution of Maryland building stones, together with a history of the quarrying industry.
Md. Geol. Surv., vol. ii, pp. 125–241, pls. vii–xxxii, figs. 19, 1898.
Describes the occurrence and character of the granites, marbles, limestones, sandstones, and slate used as building materials. Includes a bibliography of the subject and several geologic maps.

532 —— The maps and map makers of Maryland.
Md. Geol. Surv., vol. ii, pp. 337–488, pls. xliii–xlviii, figs. 27–34, 1898.
Describes the various maps that have been made of the State.

533 —— The first geological excursion along the Chesapeake, in 1608.
Johns Hopkins Univ., Circ., vol. xviii, pp. 14–15, 1898.
Gives an account of topographic and geologic work done by Capt. John Smith.

534 —— See **Diller** (J. S.), No. 234.

535 **Matthew** (George F.). Studies of Cambrian faunas.
Can. Roy. Soc., Proc. and Trans., 2d ser., vol. iii, sect. iv, pp. 165–203, 4 pls., 1898.
Describes a new subfauna of the Paradoxides beds of the St. John group and Billing's primordial fossils of Vermont and Labrador.

536 —— The oldest Paleozoic fauna.
Abstracts, Am. Assoc. Adv. Sci., Proc., vol. xlvii, pp. 301–302 (½ p.); Science, new ser., vol. viii, pp. 503–504 (½ p.); Am. Geol., vol. xxii, p. 262 (½ p.), 1898.

537 —— Some characteristic genera of the Cambrian.
Brit. Assoc. Adv. Sci., Rept., 1897, pp. 657–658; Review, Geol. Mag., dec. iv, vol. v, pp. 82–83, 1898.
Gives a summary of the relations of the various genera.

538 —— [Review of "A revision of the Puerco fauna," by W. D. Matthews.]
Am. Geol., vol. xxi, pp. 190–191, 1898.

538*a* —— Recent discoveries in the St. John group. No. 2.
N. B. Nat. Hist. Soc., Bull. No. 16, pp. 32–43, 1 pl., 1898.
Describes general characters of some of the Protolenus fauna and the geologic features of the Kennebecasis Valley.

539 **Maxwell** (Walter). Lavas and soils of the Hawaiian Islands.

Hawaiian Experiment Station, 186 pp., 4 pls. and map; Review, Am. Nat., vol. xxxii, pp. 537–539, 1898.

Describes the lavas, and the character of the soils derived from them. Includes chemical analyses of the various lavas.

540 **Maynard** (George W.). The chromite deposits of Port au Port Bay, Newfoundland.

Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 283–288, 1898.

Describes the occurrence of chrome ores in this region.

541 **Mead** (J. R.). The drill hole at Wichita [Kansas].

Kan. Acad. Sci., Trans., vol. xv, pp. 20–22, 1898.

Gives the section to a depth of 642 feet.

542 **Medeira** (George). See **Day** (W. C.), No. 227.

543 **Meem** (James C.). [Geology and its relations to topography.]

Am. Soc. Civil Engrs., Trans., vol. xxxix, pp. 82–83, 1898.

In discussion of paper by John C. Branner on the same subject.

544 **Merivale** (Walter). Occurrences and mining of manjak, in Barbados, West Indies.

North of Eng. Inst., Mg. and Mech. Engrs., Trans., vol. xlvii, Pt. III, pp. 119–127, 1898.

Describes occurrence of bituminous material locally known as manjak.

545 **Merriam** (John C.). The distribution of the Neocene sea urchins of middle California, and its bearing on the classification of the Neocene formations.

Univ. of Cal., Dept. of Geol., Bull., vol. ii, pp. 109–118, 1898.

Discusses the occurrence and relations of species, the character and relations of the San Pablo formation, the classification of the Neocene and the correlation of the auriferous gravels.

546 —— [Fossils from the San Pablo formation, California.]

Jour. of Geol., vol. vi, pp. 494–495, 1898.

Gives a list of fossils from Kirker Pass, Contra Costa County.

547 **Merrill** (F. J. H.). A guide to the study of the collections of the New York State Museum.

N. Y. State Mus., Bull., vol. iv, No. 19, pp. 107–262, pls. i–cxix, 1898.

Describes the general principles of geology and gives a brief account of the various geologic subdivisions, and of the economic products occurring in New York.

548 **Merrill** (F. J. H.). The geology of the crystalline rocks of southeastern New York.

N. Y. State Mus., 50th Ann. Rept., vol. i, Appendix A, pp. 21–31, pls. i–v, 1898.

Describes character and occurrence of the crystalline rocks and of the pre-Cambrian, Cambrian, and Silurian strata.

549 **Merrill** (F. J. H.). The origin of the serpentine in the vicinity of New York.

N. Y. State Mus., 50th Ann. Rept., vol. i, Appendix B, pp. 32–44, pls. vi–viii, 1898.

Discusses the origin of serpentine and describes its occurrence in the vicinity of New York. Includes a list of papers consulted

550 —— Road materials and road building in New York.

N. Y. State Mus., 50th Ann. Rept., vol. i, Appendix, pp. 91–131, pls. i–xiv, 1898.

See Bibliography and Index for 1897, No. 427.

551 —— Geology of the vicinity of Greater New York.

Am. Geol., vol. xxi, pp. 72–73 (½ p.), 1898.

Contains summary of paper read before the New York Academy of Sciences.

552 **Merrill** (George P.). Rocks, rock-weathering, and soils.

411 pp., Macmillan & Co., New York, 1897.

Review, Jour. of Geol., vol. vi, pp. 208–210, 1898.

553 —— The physical, chemical, and economic properties of building stones.

Md. Geol. Surv., vol. ii, pp. 47–123, pls. iv–vi, figs. 1–18, 1898.

Describes the geologic occurrence, weathering, and methods of testing building stones, with special reference to the Maryland building stones.

554 —— See **Diller** (J. S.), No. 234.

555 **Merriman** (Mansfield). The slate regions of Pennsylvania.

Stone, vol. xvii, pp. 77–90, 5 figs., 1898.

Describes the occurrence and character of slate in Pennsylvania.

556 —— See **Day** (W. C.), No. 227.

557 **Merritt** (William Hamilton). Gold-bearing reefs and placers of northern British Columbia.

Federated Can. Mg. Inst., Jour., vol. iii, pp. 103–112, 4 figs., 1898; Can. Mg. Rev., vol. xvii, pp. 74–78, 4 figs., 1898.

Contains notes on the placers and placer mining of the region.

558 **Merrivak** (Walter). Barbados Manjak.

Eng. and Mg. Jour., vol. lxvi, pp. 790–791, 1898.

Describes the occurrence and character of asphaltum on the island of Barbados in the West Indies.

559 **Mickle** (G. R.). Mineralogical notes on Sudbury anthracite [Ontario].

Can. Inst., Proc., new ser., vol. i, pp. 64–65, 4 figs., 1897.

Describes character and occurrence of a coal-like substance.

560 **Miller** (Arthur M.). The hypothesis of a Cincinnati Silurian island.

Am. Geol., vol. xxii, pp. 78–85, 1898.

Discusses the evidence bearing on the theory of the Cincinnati uplift.

561 **Miller** (Arthur M.). Natural arches of Kentucky.
Science, new ser., vol. vii, pp. 845–846, 1 fig., 1898.
Describes the formation of natural bridges in the eastern Kentucky coal field.

562 **Miller** (Thomas D.). The recently developed oil field of Texas.
Eng. and Mg. Jour., vol. lxv, p. 734, 4 figs., 1898.
Describes occurrence of oil near Corsicana, Texas.

563 **Miller** (Willet G.). On some nickeliferous magnetites.
Brit. Assoc. Adv. Sci., Rept., 1897, pp. 660–661 (½ p.), 1898.
Contains brief note on the occurrence in Ontario.

564 —— Note on some basic dikes and volcanic rocks of eastern Ontario and Quebec.
Can. Inst., Proc., new ser., vol. i, pp. 85–86, 1897.
Refers to recent literature describing these rocks.

565 —— **Goodwin** (W. L.) and. Note on a mineral of the columbite group.
See Goodwin (W. L.) and Miller (W. G.), No. 306.

566 **Minot** (Charles S.). A memento of Prof. Edward D. Cope.
Science, new ser., vol. viii, pp. 113–114, 1898.
Presents a table prepared by Professor Cope, showing his views of the phylogeny of the mammalia.

567 **Moncton** (G. F.). Notes on mining on the coast of British Columbia and the adjacent islands.
Can. Mg. Rev., vol. xvii, pp. 70–72, with map; Federated Can. Mg. Inst., Jour., vol. iii, pp. 96–99, 2 figs., 1898.
Describes the general geologic features and the occurence of gold.

568 —— Notes on the gold-bearing lodes of Cayoosh Creek, British Columbia.
Federated Can. Mg. Inst., Jour., vol. ii, pp. 1–4, 2 figs., 1897.
Describes the occurrence of gold and the geologic structure of the region.

569 **Moore** (Joseph). Account of a morainal stone quarry of Upper Silurian limestone near Richmond [Indiana].
Ind. Acad. Sci., Proc., 1896, pp. 75–76, 4 figs., 1897.
Describes glacial phenomena of the vicinity.

570 —— The Randolph mastodon.
Ind. Acad. Sci., Proc., 1896, pp. 277–278, 1 pl., 1897.
Describes remains of a mastodon found in Indiana.

571 **Moses** (Alfred J.). Some new appliances and methods for the study of crystals.
N. Y. Acad. Sci., Trans., vol. xvi, pp. 45–56, 8 figs., 1898.
Describes appliances for studying small detached crystals and crystals in thin sections.

572 **Moses** (Alfred J.) and **Parsons** (Charles Lathrop). **Elements of mineralogy, crystallography, and blowpipe analysis.**
D. Van Nostrand Company, New York, 342 pp., 1897.

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573 **Newberry** (John Strong). New species and a new genus of American Paleozoic fishes, together with notes on the genera Oracanthus, Dactylodus, Polyrhizodus, Sandalodus, Deltodus. Edited by Bashford Dean.
N. Y. Acad. Sci., Trans., vol. xvi, pp. 282–304, pls. xxii–xxiv, 1898.
Describes material mainly from the Carboniferous of the Mississippi Valley.

573*a* —— The later extinct floras of North America. Edited by Arthur Hollick.
U. S. Geol. Surv., Mon. XXXV, 151 pp., pls. i–lxviii, 1898.

574 **Newell** (F. H.). Mesa Verde [Colorado].
Nat. Geog. Mag., vol. ix, pp. 431–434, 1898.
Describes physiographic features in southwestern Colorado.

575 **Newsom** (John F.). A geological section across southern Indiana, from Hanover to Vincennes.
Jour. of Geol., vol. vi, pp. 250–256, pl. xi, 1898; Abstract, Ind. Acad. Sci., Proc., 1897, pp. 250–253, 1897.
Describes the physiographic features of the region and the occurrence of Silurian, Devonian, and Carboniferous strata.

576 —— The Knobstone group in the region of New Albany [Indiana].
Ind. Acad. Sci., Proc., 1897, pp. 253–256, with geologic map, 1898.
Describes the character and occurrence of the formation.

577 **Nicolls** (William Jasper). The story of American coals.
J. B. Lippincott Company, Philadelphia, 405 pp., 1897.

578 **Nicholson** (John T.), **Adams** (Frank D.) and. Preliminary notice of some experiments on the flow of rocks.
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579 **Nitze** (Henry B. C.) and **Wilkins** (H. A. J.). Gold mining in North Carolina and adjacent southern Appalachian regions.
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580 **Oliphant** (F. H.). Petroleum.
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Includes statistics of production, notes on occurrence in Indiana, by W. S. Blatchley, and notes on occurrence in California, Texas, and Wyoming, by W. C. Knight.

581 **Orcutt** (C. R.). Note on the occurrence of tourmalines in California.

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582 **Ordonez** (Ezequiel). Les filons argentifères de Pachuca [Mexique].

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583 **Orton** (Edward). What geology owes to the miner of coal.

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584 —— Geological probabilities as to petroleum.

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Discusses the origin of petroleum and gas, the evidences of their ascending or descending in geologic formations, the dominant features in their accumulation, and the duration of their supply.

585 **Osborn** (Henry Fairfield). Wasatch and Bridger beds in the Huerfano Lake basin.

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585*a* —— The extinct Rhinoceroses.

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Describes the morphology of the skull and teeth and the characters of a series of skulls from the White River beds. Includes a bibliography.

586 —— A complete skeleton of Teleoceras fossiger. Notes upon the growth and sexual characters of this species.

Am. Mus. Nat. Hist., Bull., vol. x, pp. 51–59, pls. iv–iv *a*; Science, new ser., vol. 7, pp. 554–557, 1 fig., 1898.

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587 —— A complete skeleton of Coryphodon radians. Notes upon locomotion of this animal.

Am. Mus. Nat. Hist., Bull., vol. x, pp. 81–91, pl. x, 2 figs., 1898.

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588 —— Remounted skeleton of Phenacodus primævus. Comparison with Euprotogonia.

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589 —— Evolution of the Amblypoda, Part I. Taligrada and Pantodonta.

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590 —— Additional characters of the great herbiverous dinosaur Camarasaurus.

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591 **Osborn** (Henry Fairfield). The origin of the Mammalia.

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592 ——Reconstruction and model of Phenacodus primævus Cope.

Brit. Assoc. Adv. Sci., Rept., 1897, p. 684 (½ p.), 1898.

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593 —— Origin of the Mammalia.

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594 —— A complete skeleton of Coryphodon radians. Notes upon the locomotion of this animal.

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595 —— Models of extinct vertebrates.

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596 **Packard** (Alpheus S.). A half century of evolution, with special reference to the effects of geological changes in animal life.

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597 **Palmer** (C. S.) and **Stoddard** (W. B.). The dike on the Columbia vein in Ward district, Boulder County, Colorado.

Colo. Sci. Soc., Proc., vol. v, pp. 159–164, 1 fig., 1898.

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598 **Parker** (Edward W.). Abrasive materials.

U. S. Geol. Surv., 19th Ann. Rept., pt. vi (continued), pp. 515–533, 1898.

Includes statistics of production and notes on the occurrence of corundum in Ontario, by Courtenay De Kalb, and on the occurrence of pumicestone in Nebraska, South Dakota, and Utah.

599 —— Fluorspar.

U. S. Geol. Surv., 19th Ann. Rept., pt. vi (continued), pp. 613–617, 1898.

Includes statistics of production and notes on cryolite deposits of Greenland by H. S. Canby.

600 **Parsons** (Charles Lathrop), **Moses** (Alfred J.), and. Elements of mineralogy, crystallography and blowpipe analysis.

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601 **Patton** (H. B.). Spherulites containing chalcedony and opal in Colorado.

Colo. Sci. Soc., Proc., vol. v, pp. 165–170, 2 pls., 1898.

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602 **Patton** (H. B.). Peculiar geological formations on the headwaters of the Rio Grande, Colorado.
Colo. Sci. Soc., Proc., vol. v, pp. 171-172, 2 pls., 1898.
See Bibliography and Index for 1896, No. 529.

603 —— Tourmaline and tourmaline schists from Belcher Hill, Jefferson County, Colorado.
Abstracts: Science, new ser., vol. viii, pp. 464-465 (¼ p.); Am. Geol. vol. xxii, p. 251 (¼ p.), 1898.

604 **Pearce** (Richard). The mode of occurrence of gold in the ores of the Cripple Creek district [Colorado].
Colo. Sci. Soc., Proc., vol. v, pp. 5-10, 1 pl., 1898.
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605 —— Further notes on Cripple Creek ores [Colorado].
Colo. Sci. Soc., Proc., vol. v, pp. 11-16, 1898.
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606 —— Occurrence of tellurium in oxidized form associated with gold.
Colo. Sci. Soc., Proc., vol. v, pp. 144-147, 1898.
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607 —— Some notes on the occurrence of uraninite in Colorado.
Colo. Sci. Soc., Proc., vol. v, pp. 156-158, 1898.
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608 —— Notes on the occurrence of a rich silver and gold mineral containing tellurium in the Griffith lode, near Georgetown, Clear Creek County, Colorado.
Colo. Sci. Soc., Proc., vol. v, pp. 242-243, 1898.
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609 —— Notes on the occurrence of tellurium in an oxidized form in Montana.
Colo. Sci. Soc., Proc., vol. v, pp. 244-245, 1898.
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610 —— Note on the occurrence of rhodocrosite in the Original mine, Butte, Montana.
Colo. Sci. Soc., Bull. No. 1, p. 8, 1898.
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611 —— Notes on the occurrence of selenium with pyrite rich in gold and silver.
Colo. Sci. Soc., Bull. No. 5, pp. 1-2, 1898.
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612 —— Remarks on a gold nugget from Montana.
Colo. Sci. Soc., Bull. No. 5, pp. 2-3, 1898.
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Colo. Sci. Soc., Bull., No. 6, pp. 4-6, 1898.
Gives chemical analyses of the material and remarks on the indications of a new mineral.

614 **Peary** (Robert E.). Northward over the great ice: A narrative of life and work along the shores and upon the interior ice cap of northern Greenland in the years 1886 and 1891-1897.
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Am. Phil. Soc., Proc., vol. xxxvii, pp. 108-139, 1898.

616 **Penfield** (S. L.). See **Brush** (George J.), No. 114.

617 —— [On krennerite from Cripple Creek, Colorado.]
See Chester (A. H.), No. 150.

618 —— On pearcite, a sulpharsenite of silver, and on the crystallization of polybasite.
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Am. Nat., vol. xxxii, pp. 464-465, 1898.

621 **Penrose** (R. A. F., jr.). [Geology and its relations to topography.]
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622 —— The ore deposits of Cripple Creek [Colorado].
Colo. Sci. Soc., Proc., vol. v, pp. 50-53, 1898.
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623 **Perrine** (Charles D.). Earthquakes in California in 1896 and 1897.
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624 **Perry** (J. H.). The physiography of Worcester, Mass.
Review by W. M. Davis, Science, new ser., vol. vii, pp. 850-851 (½ p.), 1898.

625 **Petre** (R. W.). Mines of La Plata Mountains, Colorado.
Eng. and Mg. Jour., vol. lxvi, pp. 667-668, 2 figs., 1898.
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626 **Phillips** (William B.). The brown ore deposits near Leeds, Alabama.

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627 —— Die Goldlagerstätten in Alabama.

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628 **Pilsbry** (Henry A.). Note on the "Florencia formation."

Am. Jour. Sci., 4th ser., vol. v, pp. 232–233, 1898.

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629 **Pirsson** (L. V.). See **Diller** (J. S.), No. 234.

630 —— **Weed** (W. H.) and. Geology and mineral resources of the Judith Mountains of Montana.

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631 **Poole** (Henry S.). The mineralogy of the Carboniferous.

Can. Mg. Rev., vol. xvii, pp. 50–51; Federated Can. Mg. Inst., Jour., vol. iii, pp. 77–81, 1898.

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632 **Powell** (J. W.). An hypothesis to account for the movement in the crust of the earth.

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633 **Pratt** (J. H.). Mineralogical notes on cyanite, zircon, and anorthite from North Carolina.

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634 —— Mineralogical notes on anthophyllite, enstatite, and beryl (emerald) from North Carolina.

Am. Jour. Sci., 4th ser., vol. v, pp. 429–432, 1898; Abstract, Am. Geol., vol. xxii, p. 377 (6 l.), 1898.

Describes their occurrence and crystallographic and chemical characters.

635 —— On the origin of the corundum associated with the peridotites in North Carolina.

Am. Jour. Sci., 4th ser., vol. vi, pp. 49–65, figs. 1–8, 1898; Review, Am. Geol., vol. xxii, pp. 377–378 (¼ p.), 1898.

Reviews the literature on the subject and discusses the origin and relations of corundum. Includes two geologic sketch maps.

636 —— The occurrence, origin, and chemical composition of chromite.

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637 **Pratt** (J. H.), **Hidden** (W. E.) and. On rhodolite, a new variety of garnet.

See Hidden (W. E.) and Pratt (J. H.), No. 348.

637*a* —— —— Twinned crystals of zircon from North Carolina.

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638 —— —— On the associated minerals of rhodolite.

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639 **Preston** (H. L.). On iron meteorites, as nodular structures in stony meteorites.

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640 —— San Angelo meteorite.

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Ind. Acad. Sci., Proc. 1897, pp. 262–266, with geologic map and sections, 1898.

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642 **Prosser** (Charles S.). The classification and distribution of the Hamilton and Chemung series of central and eastern New York. Part I.

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Describes the classification and stratigraphic and faunal characters of the series. Accompanied by geologic map.

643 —— and **Cumings** (Edgar R.). Sections and thickness of the Lower Silurian formations on West Canada Creek and in the Mohawk Valley [New York].

N. Y. 15th Ann. Rept. State Geologist, vol. i, pp. 23–24, 615–659, pls. i–xii, 1897; N. Y. State Mus., 49th Ann. Rept., vol. ii, pp. 615–659, pls. i–xii, 1898.

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644 **Purington** (Chester Wells). Preliminary report on the mining industries of the Telluride quadrangle, Colorado.

U. S. Geol. Surv., 18th Ann. Rept., Pt. III, pp. 751–848, pls. ciii–cxviii, figs. 66–74, 1898.

Gives a general description of the sedimentary and igneous rocks, the fissures and vein systems, and the occurrence of the silver and gold ores. Discusses the origin and age of the ore deposits.

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645 **Quereau** (Edmund Chase). Topography and history of Jamesville Lake, New York.

Geol. Soc. Am., Bull., vol. ix, pp. 173–182, pls. 12–14; Abstract, Science, new ser., vol. vii, pp. 50–51 (½ p.), 1898; Review by W. M. Davis, Science, new ser., vol. vii, pp. 489–490, 1898.

Describes the general features of the region, the origin of this and similar lakes, and the peculiar features of the Jamesville Gorge.

646 **Quimby** (George E.). [Tripoli deposits of Newton County, Missouri.]

The Mineral Industry, 1897, p. 17, 1898.

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647 **Rand** (Theodore D.). The Birdsboro trap quarries.

Phil. Acad. Nat. Sci., Proc. 1898, p. 10, 1898.

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648 **Ransome** (F. Leslie). Some lava flows of the western slope of the Sierra Nevada, California.

U. S. Geol. Surv., Bull. 89, 74 pp., pls. i–xi, 1898; Abstract, Am. Jour. Sci., 4th ser., vol. v, pp. 355–375, figs. 1–2; Review, Am. Nat., vol. xxxii, p. 614, 1898.

Describes the physiography of the region, the occurrence, distribution, and chemical and petrographic characters of the latites, and discusses the classification of the rocks and the bearing of the lava flows on the evidence of oregenic movements.

649 **Reid** (Harry Fielding). The variations of glaciers. III.

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650 —— The stratification of glaciers.

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651 —— Notes on living and extinct species of North American Bovidæ.

Phil. Acad. Nat. Sci., Proc. 1897, pp. 483–502, pl. xii, 1898.

652 **Rhoads** (Samuel N.). Notes on the fossil walrus of eastern North America.

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653 **Rice** (William North). A suggestion in regard to the theory of volcanoes.

Abstract, Am. Assoc. Adv. Sci., Proc., vol. xlvi, pp. 199–200, 1898.

654 —— [Review of "Volcanoes of North America: A reading lesson for students of geography and geology," by Israel C. Russell.]

Science, new ser., vol. vii, pp. 34–36, 1898.

655 **Richardson** (C. H.). The Washington limestone in Vermont.

Abstracts, Am. Assoc. Adv. Sci., Proc., vol. xlvii, pp. 295–296; Science, new ser., vol. viii, pp. 469–470 (½ p.); Am. Geol., vol. xxii, pp. 257–258 (½ p.), 1898.

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656 **Rickard** (T. A.). Vein structure in the Enterprise mine [Colorado].

Colo. Sci. Soc., Proc., vol. v, pp. 123–130, 6 pls., 1898.

Describes the vein phenomena in this mine.

657 —— The minerals which accompany gold and their bearing upon the richness of the ore deposits.

Mg. and Sci. Press, vol. lxxvii, pp. 81–82 and 105–106, 1898.

658 **Ries** (Heinrich). Geology of Orange County [New York].

N. Y., 15th Ann. Rept. State Geologist, vol. i, pp. 18–19, 393–476, pls. i–xl, 26 figs., 1897; N. Y. State Mus., 49th Ann. Rept., vol. ii, pp. 393–476, pls. i–xl, 26 figs., 1898.

Describes the physiography, the character, and occurrence of the pre-Cambrian, Cambrian, Silurian, Devonian, and Pleistocene rocks, and of the dike rocks, and the occurrence of road material, clays, building stones, and iron ores.

659 —— Physical tests of the Devonian shales of New York State to determine their value for the manufacture of clay products.

N. Y., 15th Ann. Rept. State Geologist, vol. i, pp. 673–698, 1897; N. Y. State Mus., 49th Ann. Rept., vol. ii, pp. 673–698, 1898.

Describes the general properties of shales and the character and occurrence of the shale-bearing divisions of the Silurian and Devonian systems of New York.

660 —— The clay-working industry of the United States in 1897.

U. S. Geol. Surv., 19th Ann. Rept., Pt. VI (continued), pp. 469–486, 1898.

Includes statistics of production, analyses of clays, and general notes on the geologic occurrence of clays.

661 —— Clay deposits and clay industry in North Carolina. A preliminary report.

N. C. Geol. Surv., Bull. No. 13, 157 pp., pls. i–vii, figs. 1–5, 1897; Reviews, Jour. of Geol., vol. vi, pp. 545–547; Am. Geol., vol. xxii, p. 382 (½ p.), 1898.

Describes the origin, chemical and physical characters of clay, and the occurrence and character of the clays of North Carolina. Includes a bibliography.

662 —— The fuller's earth of South Dakota.

Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 333–335, 1898.

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663 —— The clays and clay industry of Colorado.

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664 —— Allanite crystals from Mineville, Essex County, New York.

N. Y. Acad. Sci., Trans., vol. xvi, pp. 327–329, 2 figs., 1898.

Describes their occurrence and crystallographic characters.

665 **Ries** (Heinrich). Note on a beryl crystal from New York City.
N. Y. Acad. Sci., Trans., vol. xvi, pp. 329–330, 1 fig., 1898.
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666 —— Physical tests of New York shales.
School of Mines Quart., vol. xix, pp. 192–194, 1898.
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667 —— Clay industries of New York.
N. Y. State Mus., 48th Ann. Rept., vol. i, Appendix, pp. 97–262, 3 pls., 24 figs. and map, 1898.
See Bibliography and Index for 1895, No. 398.

668 **Riggs** (E. S.). On the skull of Amphictis.
Am. Jour. Sci., 4th ser., vol. v, pp. 257–259, 2 figs., 1898.
Describes material in the collections at Princeton University.

669 **Roberts-Austin** (Professor). Canada's metals.
Macmillan & Co., limited, London, 46 pp., 13 figs., 1898.
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670 **Roy** (Andrew). Geology of the Jackson County coal in Ohio.
Abstract, Eng. and Mg. Jour., vol. lxv, p. 164, 1898.
Describes the occurrence of coal in this county.

671 **Ruedemann** (R.). Development and mode of growth of Diplograptus McCoy.
N. Y., 14th Ann. Rept. State Geologist, pp. 219–249, 5 pls.; N. Y. State Mus., 48th Ann. Rept., vol. ii, pp. 219–249, 5 pls. Review by Stuart Weller, Jour. of Geol., vol. vi, p. 206, 1898.

672 —— The discovery of a sessile Conularia.
N. Y., 15th Ann. Rept. State Geologist, vol. i, pp. 24, 699–728, pls. i–iv, 1897; N. Y. State Mus., 49th Ann. Rept., vol. ii, pp. 699–728, pls. i–iv, 1898.

673 —— Additional note on the oceanic current in the Utica epoch.
Am. Geol., vol. xxi, pp. 75–81, figs. 1–2, 1898.
Discusses the evidences of Ordovician strata overlying the Adirondack crystalline area.

674 —— On the development of Tetradium cellulosum Hall sp.
Am. Geol., vol. xxii, pp. 16–25, pl. v, 1898.
Reviews the literature on the genus and describes material from the Trenton limestone of New York.

675 —— Synopsis of recent progress in the study of graptolites.
Am. Nat., vol. xxxii, pp. 1–16, 28 figs., 1898.
Reviews recent work on graptolites and gives a bibliography.

676 **Russell** (Israel Cook). Glaciers of Mount Rainier, with a paper on the rocks of Mount Rainier, by George Otis Smith.
U. S. Geol. Surv., 18th Ann. Rept., Pt. II, pp. 355–423, pls. lxv–lxxxii, 1898.
Describes the physical features of the State of Washington and the glaciers and glacial phenomena of the region.

677 **Russell** (Israel Cook). The great terrace of the Columbia and other topographic features in the neighborhood of Lake Chelan, Washington.

Am. Geol., vol. xxii, pp. 362–369, 1898.

Describes the occurrence of the terrace and other glacial features of the region.

678 —— Topographic features due to landslides.

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Describes some physiographic features of eastern Washington and Oregon.

679 —— Geography of the Laurentian basin.

Am. Geog. Soc., Bull., vol. xxx, pp. 226–254, 6 figs., 1898.

Includes a discussion of the glacial history of the region.

680 **Rutherford** (John). Notes on the albertite of New Brunswick.

Can. Mg. Rev., vol. xvii., pp. 19–22, 2 figs.; Federated Can. Mg. Inst. Jour., vol. iii, pp. 40–46, 1 fig., 1898.

Describes occurrence and origin in the Albert Mines.

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681 **Salisbury** (Rollin D.). The physical geography of New Jersey.

N. J. Geol. Surv., Final Rept., vol. iv., 170 pp., 16 pls., 37 figs; Review by W. M. Davis, Science, new ser., vol. vii, pp. 765–766, 1898.

Describes the topographic features of the State and the process of their development.

682 —— Surface geology. Report of progress [New Jersey].

N. J. Geol. Surv., Ann. Rept. for 1897, pp. 1–22, pl. i, 1898.

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683 —— [Review of "The Newark System or Red Sandstone belt," by Henry B. Kümmel.]

Jour. of Geol., vol. vi, pp. 659–661, 1898.

684 —— [Review of "The geological history of the Isthmus of Panama and portions of Costa Rica," by R. T. Hill].

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685 **Sardeson** (F. W.). The so-called Cretaceous deposits in southeastern Minnesota.

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686 —— Interformational conglomerates in the Galena series.

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687 —— Remarks on the loess.

Abstract, Iowa Acad. Sci. Proc., vol. v, pp. 11–12, 1898.

Discusses the limitation of the name to æolian deposits.

688 **Schmidt** (A.). [Review of "Die Goldlagerstätten in Alabama," by William B. Phillips].

Zeit. für prak. Geol., 1898, heft 7, pp. 253–254, 1898.

689 **Schneider** (Philip F.). The limestones of central New York.

Stone, vol. xviii, pp. 26–29, 1898.

Describes the character and occurrence of limestones from the several geologic formations of the region.

690 **Schuchert** (Charles), **White** (David) and. Cretaceous series of the west coast of Greenland.

See White (D.) and Schuchert (C.) No. 872.

691 **Scott** (William B.). Memoir of Edward D. Cope.

Geol. Soc. Am., Bull., vol. ix, pp. 401–408, 1898.

Gives a sketch of the scientific work of Professor Cope.

692 —— Preliminary note on the selenodont artiodactyls of the Uinta formation.

Am. Phil. Soc., Proc., vol. xxxvii, pp. 73–81, 1898.

Describes new genera and species.

693 **Scupham** (J. R.). The buried river of California as a source of gold.

Mines and Minerals, vol. xix, pp. 150–152, 1 fig., 1898.

Describes former drainage systems and the occurrence of placer gold.

694 **Seward** (A. C.). Fossil plants for students of botany and geology. Vol. I.

University Press, Cambridge, England, 450 pp.; Review by Henry C. Cowles, Jour. of Geol., vol. vi, pp. 436–438; Bot. Gazette, vol. xxvi, pp. 59–61, 1898.

695 **Shaler** (N. S.). Geology of the Cape Cod district [Massachusetts].

U. S. Geol. Surv., 18th Ann. Rept., Pt. II, pp. 503–593, pls. xcvii–civ, figs. 86–92, 1898.

Describes the general relations of the sedimentary series, understructure, Glacial deposits and history, and other features of the Cape Cod region.

696 **Shattuck** (George Burbank). Two excursions with geological students into the coastal plain of Maryland.

Johns Hopkins Univ., Circ., vol. xviii, pp. 15–16, 1898.

Describes Cretaceous and Tertiary sections in eastern Maryland.

697 —— See **Clark** (W. B.), No. 152.

698 **Shephard** (Edward M.). A report upon Greene County [Missouri].

Mo. Geol. Surv., vol. xii, Pt. I, pp. 15–245, 5 pls., 1 fig., and geologic map, 1898.

Describes the physiographic features, the character, occurrence, and relations of the subdivisions of the Carboniferous, Devonian, and Silurian formations, the geologic structure and the occurrence of the economic products of the region.

699 **Sherzer** (W. H.). Limestones of southeastern Michigan, with their associated sandstone, salt, and gypsum.

Abstract, Geol. Soc. Am., Bull., vol. ix, pp. 10–11, 1898.

Describes the occurrence of Silurian and Devonian strata of the region.

700 **Shimek** (B.). Is the loess of aqueous origin?

Iowa Acad. Sci., Proc., vol. v, pp. 32–45, 1898.

Describes the fauna and its bearing on the origin of the loess. Gives a list of loess molluscan fossils.

701 **Siebenthal** (C. E.). The Bedford oolitic limestone [Indiana].

U. S. Geol. Surv., 19th Ann. Rept., Pt. VI (continued), pp. 292-296, 1898.

Describes its character and occurrence in Indiana.

702 **Simpson** (George B.). A handbook of the genera of the North American Paleozoic Bryozoa. With an introduction upon the structure of living species.

N. Y., 14th Ann. Rept. State Geologist, pp. 407–608, 30 pls., 222 figs., 1897; N. Y. State Mus., 48th Ann. Rept., vol. ii, pp. 407–608, 30 pls., 222 figs., 1897.

703 **Sjögren** (Ahe). Notes on the eastern section of Costa Rica.

Harvard Coll., Mus. Comp. Zool., Bull., vol. xxviii, pp. 281–282, 1898.

Includes brief notes on the stratigraphy of the region.

704 **Slichter** (Charles S.). Note on the pressure within the earth.

Jour. of Geol., vol. vi, pp. 65–78, 3 figs., 1898.

Discusses the magnitude of the pressure within the earth as influenced by changes in the ellipticity of the earth's figure.

705 **Smith** (E. A.). Alabama gold mining notes.

Mines and Minerals, vol. xix, p. 129 (½ p.), 1898.

Contains brief notes on the gold fields of Alabama.

706 —— The clay resources of Alabama and the industries dependent upon them.

Eng. and Mg. Jour., vol. lxvi, p. 369, 1898.

Describes the chemical and physical characteristics and occurrence of Alabama clays.

707 —— The stone industry of Alabama.

Eng. and Mg. Jour., vol. lxvi, p. 398, 1898.

Describes the occurrence and distribution of building stones in Alabama.

708 **Smith** (Frank Clemens). The Potsdam gold ores of the Black Hills of South Dakota.

Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 404–428, 1898.

Describes the occurrence, character, and origin of the so-called Potsdam siliceous gold and silver ores.

709 **Smith** (George Otis). The rocks of Mount Rainier [Washington].

U. S. Geol. Surv., 18th Ann. Rept., Pt. II, pp. 416–423, 1898.

Describes the relations and characters of the granite and volcanic rocks of the region.

710 —— Igneous phenomena in the Tintic Mountains, Utah.

Science, new ser., vol. vii, p. 502 (½ p.), 1898.

Contains summary of paper read before the Geological Society of Washington.

711 —— See **Diller** (J. S.), No. 234.

712 **Smith** (James Perrin). Geographic relations of the Trias of California.

Jour. of Geol., vol. vi, pp. 776–786, 1898.

Reviews the literature, gives a table showing the correlation of marine Triassic sediments, and discusses the faunal and stratigraphic features of the Trias of California.

713 —— The development of Lytoceras and Phylloceras.

Cal. Acad. Sci., Proc., 3d ser., Geology, vol. i, pp. 129–152, pls. xvi–xx, 1898.

Discusses the nomenclature and law of acceleration of development, and describes material from the Horsetown beds of the Cretaceous.

714 **Smith** (William Sidney Tangier). A geological sketch of San Clemente Island [California].

U. S. Geol. Surv., 18th Ann. Rept., Pt. II, pp. 465–496, pls. lxxxiv–xcvi, figs. 82–85, 1898.

Describes the topography and the character of the eruptive rocks and Tertiary deposits of the island.

715 **Smock** (John C.). Administrative report [New Jersey Geological Survey].

N. J. Geol. Surv., Ann. Rept. for 1897, pp. xiii–xl, 1898.

Gives a summary of work done on the Pleistocene, Cretaceous, Jura-Trias, and Archean formations of the State.

716 **Smyth** (B. B.). The closing of Michigan glacial lakes.

Kan. Acad. Sci., Trans., vol. xv, pp. 23–27, 1898.

Describes the process of filling up small lakes in central Michigan.

717 —— The buried moraines of the Shunganunga [Kansas].

Kan. Acad. Sci., Trans., vol. xv, pp. 95–104, with map, 1898.

Describes the general features of the ice invasion of the region.

718 **Smyth** [C. H., jr.]. Report on the crystalline rocks of St. Lawrence County [New York].

N. Y., 15th Ann. Rept. State Geologist, vol. i, pp. 20–21 and 477–497, 1897. N. Y. State Mus., 49th Ann. Rept., vol. ii, pp. 477–497, 1898.

Describes the character and occurrence of the crystalline limestones and origin and relations of the gneisses.

719 **Smyth** [C. H., jr.]. Report on the talc industry of St. Lawrence County [New York].

N. Y., 15th Ann. Rept. State Geologist, vol. i, pp. 20 and 661-671, 1897; N. Y. State Mus. 49th Ann. Rept., vol. ii, pp. 661-671, 1898.

Describes occurrence and characteristics of talc in this county.

720 —— Weathering of alnoite in Manheim, New York.

Geol. Soc. Am., Bull., vol. ix, pp. 257-268, pl. 18; Reviews: Am. Geol., vol. xxii, pp. 382-383 (½ p.); Am. Nat., vol. xxxii, p. 535 (¾ p.), 1898. Abstract, Jour. of Geol., vol. vi, pp. 331-332, 1898.

Describes occurrence and petrographic and chemical characters of the rock.

721 —— The New York talc industry in 1897.

The Mineral Industry, 1897, pp. 630-631, 1898.

Includes brief notes on the occurrence of talc.

722 **Spaulding** (M. B.). The Silver Pick mine, Wilson [Colorado].

School of Mines Quart., vol. xx, pp. 41-47, 1898.

Describes the general geologic features of Mt. Wilson and the occurrence of the gold ores.

723 **Spencer** (Arthur Coe). The geology of Massanutten Mountain in Virginia.

Published by the author, Washington, D. C., 54 pp., 3 pls., 1 fig., 1897; Review by H. S. Williams, Am. Jour. Sci., 4th ser., vol. v, pp. 231-232 (½ p.); Review by C. R. Keyes, Am. Geol., vol. xxi, pp. 191-192, 1898.

Describes the occurrence and character of the Silurian and Devonian formations, the geologic structure, physiographic features, and geologic history of the region.

724 —— The Upper Cretaceous section in southwestern Colorado.

Abstract, Science, new ser., vol. vii, p. 143 (½ p.), 1898.

Contains summary of paper read before the Geological Society of Washington.

725 —— and **Girty** (G. H.). The Devonian in southwestern Colorado.

Science, new ser., vol. vii, p. 810 (½ p.), 1898.

Contains summary of paper read before the Geological Society of Washington.

726 **Spencer** (J. W.). Great changes of level in Mexico and the interoceanic connections.

Geol. Soc. Am., Bull., vol. ix, pp. 13-34, pls. 1-5, figs. 1-6; Review by W. M. Davis, Science, new ser., vol. vii, p. 203 (½ p.), 1898.

Describes the physical features of Mexico, the occurrence and character of the Lafayette, Columbia, and Coatzacoalcos formations and the evidence of recent changes of level.

727 —— Another episode in the history of Niagara River.

Abstracts: Am. Assoc. Adv. Sci., Proc., vol. xlvii, p. 299 (⅔ p.); Science, new ser., vol. viii, pp. 501-502 (½ p.); Am. Geol., vol. xxii, pp. 259-260 (½ p.), 1898.

728 **Spencer** (J. W.) Evidence of recent great elevation of New England.

Abstracts, Am. Assoc. Adv. Sci., Proc., vol. xlvii, p. 301 (12 l.); Science, new ser., vol. viii, p. 500 (½ p.); Am. Geol., vol. xxii, p. 262 (½ p.), 1898.

729 —— Niagara as a timepiece.

Can. Inst., Proc., new ser., vol. i, pp. 101-103, 1898.

Discusses the geologic history of the Niagara River.

730 —— Late formations and great changes of level in Jamaica.

Can. Inst., Trans., vol. v, pp. 325-357, pls. i-vi, figs. 1-7, 1898; Review by W. M. Davis, Science, new ser., vol. vii, p. 851 (½ p.); Geol. Mag., dec. iv, vol. v, pp. 515-517; Abstract, Am. Jour. Sci., 4th ser., vol. vi, pp. 270-272, 1898.

Describes the topographic, hydrographic, and stratigraphic features of the region and its geologic history during Tertiary, Pleistocene, and Recent periods. Discusses the correlation of the formations.

731 —— Resemblance between the declivities of high plateau and those of submarine Antillean valleys.

Can. Inst., Trans., vol. v, pp. 359-368, figs. 1-6 and map; Review, Geol. Mag., dec. iv, vol. v, pp. 514-515; Abstract, Am. Jour. Sci., 4th ser., vol. vi, pp. 272-273, 1898.

Describes valleys in the United States and compares them with submarine valleys.

732 —— Another episode in the history of Niagara Falls.

Am. Jour. Sci., 4th ser., vol. vi, pp. 439-450, 2 figs., 1898.

Describes recent observations on the geologic history of the Niagara River.

733 —— An account of the researches relating to the Great Lakes.

Am. Geol., vol. xxi, pp. 110-123, 1898.

Reviews the principal results of investigations of the geologic history of the Great Lakes.

734 —— On Mr. Frank Leverett's "Correlation of moraines with beaches on the border of Lake Erie."

Am. Geol., vol. xxi, pp. 393-396, fig. 1, 1898.

Discusses the theory of Glacial dams.

735 —— On the continental elevation of the Glacial epoch.

Brit. Assoc. Adv. Sci., Rept., 1897, pp. 651-652, Geol. Mag., dec. iv, vol. v, pp. 32-38, 1898.

Discusses the evidence of such elevation.

736 —— The West Indian bridge between North and South America.

Pop. Sci. Mo., vol. liii, pp. 10-30, 4 pls., 9 figs., 1898.

Discusses the character of land valleys, submarine plateaus, and drowned valleys, and the evidences of a connection between the Atlantic and Pacific oceans.

737 **Spencer** (J. W.). Geological waterways across Central America.

Pop. Sci. Mo., vol. liii, pp. 577-593, 9 figs., 1898.

Describes the physiography of the region and discusses the evidences of former oceanic connections.

738 **Spencer** (L. J.). Diaphorite from Montana and Mexico.

Am. Jour. Sci., 4th ser., vol. vi, p. 316, 1898.

Describes crystallographic characters of the material. Discusses relations with brongniardite.

739 **Spurr** (Josiah Edward). Geology of the Yukon gold district, Alaska, with an introductory chapter on the history and condition of the district to 1897, by Harold Beach Goodrich.

U. S. Geol. Surv., 18th Ann. Rept., Pt. III, pp. 101-392, pls. xxxii-li, figs. 7-25, 1898.

Describes the occurrence, character, and distribution of the sedimentary and igneous rocks and of the auriferous veins and placer deposits of the region. Discusses the evidences of movement in the earth's crust. Includes a report by F. H. Knowlton on the fossil plants collected, and a chapter on recent warpings of the region, by H. B. Goodrich.

739*a* —— Geology of the Aspen mining district, Colorado, with atlas.

U. S. Geol. Surv., Mon. XXXI, 260 pp., pls. i-xliii, figs. 1-11, atlas sheets i-xxx, 1898.

Describes the character and occurrence of the Cambrian, Silurian, Carboniferous, Jura-Trias, and Cretaceous sediments and the igneous rocks of the region. Includes description of the mines, a discussion of the character of the ores and ore deposition, and a discussion of fault phenomena.

740 **Squier** (G. H.). Studies in the driftless region of Wisconsin, II.

Jour. of Geol., vol. vi, pp. 182-192, figs. 3-7, 1898.

Describes occurrence and formation of beds of nonglacial origin. See Bibliography and Index for 1897, No. 577, for notice of first paper.

741 **Stanton** (Timothy W.). Memoir of Joseph Francis James.

Geol. Soc. Am., Bull., vol. ix, pp. 408-411, 1898.

Gives a sketch of the life and scientific work of Professor James and includes a list of his published papers.

742 —— The Mesozoic section of Sierra Blanca, Texas.

Science, new ser., vol. vii, p. 429 (½ p.), 1898.

Contains summary of paper read before the Geological Society of Washington.

743 **Stevenson** (John J.). Notes on the geology of the Bermudas.

N. Y. Acad. Sci., Trans., vol. xvi., pp. 96-124, pls. viii-x, 1898.

Describes the materials forming the surface of the islands and the relations of the land and submerged area. Discusses the literature on the geologic history of the Bermudas.

744 —— [Geology and its relations to topography.]

Am. Soc. Civil Engrs., Trans., vol. xxxix, pp. 83-90, 1898.

In discussion of paper by John C. Branner on the same subject.

745 **Stewart** (Alban). A contribution to the knowledge of the Ichthyic fauna of the Kansas Cretaceous.

Kan. Univ. Quart., vol. vii, pp. 21–29, pls. i–ii, 1898.

Describes a number of new species.

746 —— Individual variations in the genus Xiphactinus Leidy.

Kan. Univ. Quart., vol. vii, pp. 115–119, pls. vii–x, 1898.

Describes material in the Kansas University museum.

747 —— Some notes on the genus Saurodon and allied species.

Kan. Univ. Quart., vol. vii, pp. 177–186, pls. xiv–xvi, 1898.

Reviews the literature on Saurocephalus and Saurodon and describes two new species of Saurodon.

748 —— A preliminary description of seven new species of fish from the Cretaceous of Kansas.

Kan. Univ. Quart., vol. vii, pp. 191–196, 2 figs., 1898.

749 **Stoddard** (W. B.), **Palmer** (C. S.) and. The dike on the Columbia vein in Ward district, Boulder County, Colorado.

See Palmer (C. S.) and Stoddard (W. B.), No. 597.

750 **Stone** (A. M.). Corundum mining in North Carolina.

Eng. and Mg. Jour., vol. lxv, p. 490 (½ p.), 1898.

Gives brief notes on the occurrence of corundum.

751 **Stone** (George H.). The granitic breccia of the Cripple Creek region [Colorado].

Am. Jour. Sci., 4th ser., vol. v, pp. 21–32, 1898.

Describes the occurrence of a number of dikes, and the character and relations of the associated granites and schists. Discusses the lacustral theory of the origin of certain deposits.

752 **Storms** (W. H.). Gold formations in California.

Mg. and Sci. Press, vol. lxxvi, pp. 110–111, 1898.

Discusses the formation of fissure systems and the occurrence of gold veins and auriferous gravels in California.

T.

753 **Taff** (Joseph A.). Geology of the McAlister quadrangle [Indian Territory].

Science, new ser., vol. vii, p. 612 (¼ p.), 1898.

Contains summary of paper read before the Geological Society of Washington.

754 **Tarr** (R. S.). The peneplain.

Am. Geol., vol. xxi, pp. 351–370, 1898.

Discusses the evidence regarding the theory of the peneplain.

755 —— Wave-formed cuspate forelands.

Am. Geol., vol. xxii, pp. 1–12, pls. i–iv, 1898.

Describes the character of the materials and mode of formation of cuspate forelands.

756 **Tarr** (R. S.). The physical geography of New York State.

Am. Geog. Soc., Bull., vol. xxviii, pp. 102–129, 3 maps, 1896; vol. xxix, pp. 16–40, 19 figs, 1897; Review by W. M. Davis, Science, new ser., vol. vii, pp. 124–125 (½ p), 1898.

Describes the general physiographic and drainage features and geologic development of the State.

757 —— The physical geography of New York State.

Am. Geog. Soc., Bull., vol. xxx, pp. 28–56, 20 figs., pp. 183–225, 30 figs., pp. 375–407, 19 figs., 1898.

Describes the plains and plateaus and the influence of the Glacial period upon the topography and drainage systems of the State.

758 **Tatham** (William). Gold mining in Georgia.

Franklin Inst., Jour., vol. cxlvi, pp. 19–26, 1898.

Describes the occurrence of gold in central Georgia.

759 **Taylor** (Frank Bursley). The Champlain submergence and uplift and their relations to the Great Lakes and Niagara Falls.

Brit. Assoc. Adv. Sci., Rept. 1897, pp. 652–653, 1898.

Discusses the evidences of the abandoned beaches.

760 —— Origin of the gorge of the whirlpool rapids at Niagara.

Geol. Soc. Am., Bull., vol. ix, pp. 59–84, figs. 1–2; Review by W. M. Davis, Science, new ser., vol. vii, p. 627 (½ p.), 1898.

Describes the character of the gorges and discusses the various interpretations of the phenomena and of their correlation.

761 —— Some features of the recent geology around Detroit [Michigan].

Abstract, Am. Assoc. Adv. Sci., Proc., vol. xlvi, pp. 201–202, 1898.

Discusses drainage features of the region.

762 —— Notes on the moraines of the Georgian Bay lobe of the ice-sheet.

Abstract, Science, new ser., vol. vii, p. 51 (⅓ p.), 1898.

763 **Teall** (J. J. H). Differentiation in igneous magmas as a result of progressive crystallization.

Brit. Assoc. Adv. Sci., Rept. 1897, pp. 661–662, 1898.

Describes certain basalts and their bearing on the theory of differentiation of igneous magmas.

764 **Thompson** (A. H.). Robert Hay.

Kan. Acad. Sci., Trans., vol. xv, pp. 131–134, 1898.

Gives a sketch of his life and character and a list of his publications.

765 **Tight** (William G.). The development of the Ohio River.

Abstracts, Science, new ser., vol. viii, pp. 465–466 (½ p.); Am. Geol., vol. xxii, p. 252 (½ p.), 1898.

766 **Tilton** (J. L.) and **Bain** (H. F.). Geology of Madison County [Iowa].

Iowa Geol. Surv., vol. vii, pp. 491–539, pls. x–xi, figs. 72–79, with geologic map, 1897.

Describes the physiographic features, the occurrence and character of the Carboniferous and Pleistocene formations, and the occurrence of building stone, road material, and coal.

767 **Todd** (James E.). A revision of the moraines of Minnesota.

Am. Jour. Sci., 4th ser., vol. vi, pp. 469–477, with map, 1898.

Reviews the work of Warren Upham on the glacial features of Minnesota.

768 —— Degradation of the loess.

Iowa Acad. Sci., Proc., vol. v, pp. 46–51, 1898.

Discusses different theories of the origin of the loess, and describes the character and process of its degradation.

769 —— Section along Rapid Creek from Rapid City westward [South Dakota].

S. D. Geol. Surv., Bull. No. 2, pp. 27–40, pls. ii–v, 1898.

Describes the Algonkian, Cambrian, Carboniferous, Juratrias, and Cretaceous rocks of the section in the eastern part of the Black Hills. Includes brief notes on the economic products.

770 —— A reconnaissance into northwestern South Dakota.

S. D. Geol. Surv., Bull. No. 2, pp. 43–68, pls. i, v–x, 1898.

Describes the physiographic features and the occurrence and character of the Cretaceous and Tertiary rocks of the region. Includes brief notes on the economic products.

771 —— The geology along the Burlington and Missouri Railway [South Dakota].

S. D. Geol. Surv., Bull. No. 2, pp. 69–82, 1898.

Includes general notes on the geology of the eastern portion of the Black Hills.

772 —— Additional notes on the limits of the main artesian basin [South Dakota].

S. D. Geol. Surv., Bull. No. 2, pp. 88–115, pl. xi, 1898.

Includes sections of well borings in various parts of the artesian basin.

773 —— The exploration of the White River bad lands in 1896 [South Dakota].

S. D. Geol. Surv., Bull. No. 2, pp, 117–135, pls. xii–xv, 1898.

Describes the Cretaceous, Tertiary, and Pleistocene strata of the region and gives notes on the character of the economic products.

774 —— The clay and stone resources of South Dakota.

Eng. and Mg. Jour., vol. lxvi, p. 371 (¼ p.), 1898.

Describes briefly the occurrence of clay and building stones.

775 —— Is the loess of either lacustrine or semilacustrine origin?

Science, new ser., vol. v, pp. 993–994, 1897.

See Bibliography and Index for 1897, No. 611.

776 **Turner** (Henry W.). Bidwell Bar folio, California.

U. S. Geol. Surv., Geol. Atlas of the U. S., Folio No. 43; Review, Jour. of Geol., vol. vi, pp. 542–544, 1898.

Describes the physiographic features and the character and occurrence of the Paleozoic, Tertiary, and Pleistocene rocks and of the gold gravels and quartz veins. Includes a description of the gold belt of California and geologic and topographic maps.

777 **Turner** (Henry W.). Notes on some igneous, metamorphic, and sedimentary rocks of the coast ranges of California.

Jour. of Geol., vol. vi, pp. 483–499, pl. xiii, 1898; Reviews, Am. Geol., vol. xxii, pp. 381–382 (½ p.); Am. Nat., vol. xxxii, p. 967 (⅓ p.), 1898.

Describes the occurrence and chemical characters of metabasalt, diabase, and serpentine, the occurrence of the Franciscan or Golden Gate series in the vicinity of Mount Diablo, and the occurrence of the San Pablo formation, with lists of fossils.

778 —— Notes on rocks and minerals from California.

Am. Jour. Sci., 4th ser., vol. v, pp. 421–428; Review, Am. Geol., vol. xxii, p. 377 (10 l.), 1898.

Describes the petrographic and chemical characters of a quartz-amphibole-diorite, a new amphibole pyroxene rock and quartz-alunite rock, and the occurrence of zircon, molybdenite, and tellurium,

779 —— Origin of Yosemite Valley [California].

Abstract, Science, new ser., vol. vii, pp. 358–359, 1898.

Contains summary of paper read before the Geological Society of Washington.

780 —— The succession of the igneous rocks of the Sierra Nevada.

Science, new ser., vol. vii, p. 612 (⅓ p.), 1898.

Contains summary of paper read before the Geological Society of Washington.

781 —— Classification of igneous rocks.

Science, new ser., vol. vii, pp. 622–625, 1898.

782 —— See **Diller** (J. S.), No. 234.

783 —— See **Hill** (R. T.), No. 352.

784 **Tyrrell** (J. Burr). Report on the Doobaunt, Kazan, and Ferguson rivers and the northwest coast of Hudson Bay, and on two overland routes from Hudson Bay to Lake Winnipeg.

Canada Geol. Surv., new ser., vol. ix, Rept. F, 218 pp., 11 pls.; Review by U. S. Grant, Am. Geol., vol. xxi, pp. 128–129, 1898.

Describes the drainage and physical features of the region and the occurrence of Laurentian, Huronian, Cambrian, Silurian, and Glacial deposits.

785 —— The glaciation of north-central Canada.

Jour. of Geol., vol. vi, pp. 147-160, pls. iv–vi, 1898.

Describes the general features of the glaciation of Canada.

786 —— The Cretaceous of Athabasca River [Athabasca].

Ottawa Nat., vol. xii, pp. 37–41, 1898.

Describes the lithologic and faunal characters of the strata and discusses their correlation with the Cretaceous of the Rocky Mountain region

787 —— The glaciation of north-central Canada.

Brit. Assoc. Adv. Sci., Rept. 1897, pp. 662–663, 1898.

Describes the glacial history of the region.

U.

788 **Udden** (Johan August). Loess as a land deposit.

Geol. Soc. Am., Bull., vol. ix, pp. 6-9, 1898.

Discusses the aqueous and æolian hypotheses of the origin of the loess.

789 —— Fucoids or coprolites.

Jour. of Geol., vol. vi, pp. 193-198, pls. vii-viii, 1898.

Compares material found in the Devonian of the Mississippi Valley with Hall's description of Spirophyton and suggests a mechanical origin of these structures.

790 —— A new well at Rock Island, Ill.

Am. Geol., vol. xxi, pp. 199-200, 1898.

Gives the section of the well to a depth of 635 feet.

791 —— Some preglacial soils.

Iowa Acad. Sci., Proc., vol. v, pp. 102-104; Abstract, Am. Geol., vol. xxi, pp. 262-264, 1898.

Describes the occurrence in Iowa and Illinois and gives a list of fossils collected.

792 —— The mechanical composition of wind deposits.

Augustana Library Publications, No. 1, 69 pp., 1898.

Discusses the character and mode of formation of wind deposits and its bearing on the problem of the loess.

793 —— A geological romance.

Pop. Sci. Mo., vol. liv, pp. 222-229, 7 figs., 1898.

Describes the occurrence, character, and origin of the volcanic ash beds in Kansas.

794 **Uhler** (P. R.). Preliminary notice of a recent series of geological accumulations—the McHenry formation.

Md. Acad. Sci., Trans. pp. 395-400, 1898.

Describes the occurrence, character, and flora of the formation on the western shore of Chesapeake Bay, in Maryland.

795 **Underwood** (George C.). See **Day** (W. C.) No. 227.

796 **Upham** (Warren). Niagara Gorge and Saint Davids Channel.

Geol. Soc. Am., Bull., vol. ix, pp. 101-110, 1898; Abstract, Science, new ser., vol. vii, pp. 84-85, 1898.

Describes the Niagara and Saint Davids gorges, the effect of the Laurentian glacial lakes on the gorge erosion, the epeirogenic movements of the region, and the duration of the falls and of the post-Glacial period.

797 —— [Review of "Seventeenth Annual Report of the United States Geological Survey."]

Am. Geol., vol. xxi, pp. 61-64, 1898.

798 —— Shell-bearing drift on Moel Tryfair [Wales].

Am. Geol., vol. xxi, pp. 81-86, 1898.

Compares this drift with that near Boston and in New Hampshire.

799 **Upham** (Warren). [Review of "Geological Survey of New Jersey, Annual Report for 1896."]
Am. Geol., vol. xxi, pp. 126-128, 1898.

800 —— [Review of "Report on Doobaunt, Kazan, and Ferguson rivers and the northwest coast of Hudson Bay, and on two inland routes from Hudson Bay to Lake Winnipeg," by J. B. Tyrrell.]
Am. Geol., vol. xxi, pp. 128-129, 1898.

801 —— Valley moraines and drumlins in the English lake district [England].
Am. Geol., vol. xxi, pp. 165-170, 1898.
Describes certain drift phenomena in England and compares them with the drift of North America.

802 —— Drumlins in Glasgow.
Am. Geol., vol. xxi, pp. 235-243, 1 fig., 1898.
Compares glacial phenomena of Scotland with those of North America.

803 —— The parallel roads of Glen Roy [Scotland].
Am. Geol., vol. xxi, pp. 294-300, 1898.
Compares the glacial lakes of the region with those of North America.

804 —— [Review of "Water resources of Indiana and Ohio," by Frank Leverett."]
Am. Geol., vol. xxi, p. 324 (½ p.), 1898.

805 —— [Review of "New development in well boring and irrigation in eastern South Dakota," by N. H. Darton.]
Am. Geol., vol. xxi, p. 325 (½ p.), 1898.

806 —— Ben Nevis, the last stronghold of the British ice-sheet.
Am. Geol., vol. xxi, pp. 375-380, 1898.
Describes glacial phenomena of the region and their resemblances to certain phenomena in North America.

807 —— The Mecklenburg or Baltic moraines.
Am. Geol., vol. xxii, pp. 43-49, 1898.
Compares these moraines with those of the United States.

808 —— [Review of "Geology of the Yukon gold district," by J. E. Spurr.]
Am. Geol., vol. xxii, pp. 49-50, 1898.

809 —— [Review of "The Valley Regions of Alabama (Paleozoic strata), Parts I-II," by Henry McCalley.]
Am. Geol., vol. xxii, p. 52 (½ p.), 1898.

810 —— [Review of "Summary report of the Geological Survey department (of Canada) for the year 1897.]
Am. Geol., vol. xxii, pp. 52-53, 1898.

811 **Upham** (Warren). Fjords and submerged valleys of Europe.

Am. Geol., vol. xxii, pp. 10–108, 1898.

Discusses evidence of Pleistocene uplift and refers to literature regarding a contemporaneous uplift in North America.

812 —— Raised shore lines at Trondhjem [Norway].

Am. Geol., vol. xxii, pp. 149–154, 1898.

Compares the raised shore lines with similar phenomena in eastern North America.

813 —— Glacial rivers and lakes in Sweden.

Am. Geol., vol. xxii, pp. 230–235, 1898.

Compares them with glacial lakes and rivers in the United States.

814 —— [Review of "Geological Survey of New Jersey. Annual Report of the State Geologist for 1897."]

Am. Geol., vol. xxii, pp. 239–240, 1898.

815 —— [Review of "Iowa Geological Survey, vol. viii."]

Am. Geol., vol. xxii, p. 240 (⅜ p.), 1898.

816 —— Giants' Kettles near Christiania and in Lucerne.

Am. Geol., vol. xxii, pp. 291–299, 1898.

Compares them with similar glacial phenomena in America.

817 —— [Review of "Fifteenth Annual Report of State Geologist (New York) for the year 1895, vol. i."]

Am. Geol., vol. xxii, pp. 324–326, 1898.

818 —— [Review of "Interglacial deposits in Iowa."]

Am. Geol., vol. xxii, p. 326 (⅜ p.), 1898.

819 —— [Review of "Report on a traverse of the northern part of the Labrador Peninsula from Richmond Gulf to Ungava Bay," by A. P. Low.]

Am. Geol., vol. xxii, pp. 326–327, 1898.

820 —— Primitive man in the Somme Valley [France].

Am. Geol., vol. xxii, pp. 350–362, 1898.

Describes terraces and compares them with New England terraces. Correlates stages of the Ice Age with those in the United States.

821 —— Evidences of epeirogenic movements causing and terminating the Ice Age.

Abstracts: Science, new ser., vol. viii, pp. 463–464 (½ p.); Am. Geol., vol. xxii, p. 250 (½ p.), 1898.

822 —— [Abstracts of geological papers read before the American Association for the Advancement of Science at the Boston meeting, 1898.]

Science, new ser., vol. viii, pp. 462–471, 501–506; Am. Geol., vol. xxii, pp. 248–265, 1898.

823 **Upham** (Warren). Fluctuations of North American glaciation shown by interglacial soils and fossiliferous deposits.
Abstracts: Am. Assoc. Adv. Sci., Proc., vol. xlvii, p. 297 (½ p.); Am. Geol., vol. xxii, p. 258 (½ p.), 1898.

824 —— Time of erosion of the Upper Mississippi, Minnesota, and St. Croix valleys.
Abstracts: Am. Assoc. Adv. Sci., Proc., vol. xlvii, pp. 297–298 (½ p.); Science, new ser., vol. viii, p. 470 (½ p.); Am. Geol., vol. xxii, pp. 258–259 (½ p.), 1898.

V.

825 **Van Diest** (E. C. and P. H.). Notes on the geology of the western slope of the Sangre de Cristo Range in Costillo County, Colorado.
Colo. Sci. Soc., Proc., vol. v, pp. 76–80, 2 figs., 1898.
See Bibliography and Index for 1896, No. 689.

826 **Van Hise** (C. R.). Metamorphism of rocks and rock flowage.
Geol. Soc. Am., Bull., vol. ix, pp. 269–328, pl. 19, 2 figs.; Abstract, Am. Jour. Sci., 4th ser., vol. vi, pp. 75–91; Review, Am. Geol., vol. xxii, 378–379, 1898.
Describes the physico-chemical principles operative in the alteration of rocks and their application to the changes in the earth's crust, and the general character of the molecular dynamic action and mass dynamic action accompanying it.

827 —— Estimates and causes of crustal shortening.
Jour. of Geol., vol. vi, pp. 10–64, 11 figs., 1898.
Discusses the evidences for the shortening of the earth crust and the causes which account for such phenomena.

828 —— The volume relations of original and secondary minerals in rocks.
Abstracts: Science, new ser., vol. viii, p. 465 (6 l.); Am. Geol., vol. xxii, p. 252 (5 l.), 1898.

829 —— See **Diller** (J. S.), No. 234.

830 **Van Ornum** (Mr.). [Geology and its relations to topography.]
Am. Soc. Civil Engrs., Trans., vol. xxxix, pp. 90–92, 1898.
In discussion of paper by John C. Branner on the same subject.

831 **Vaughan** (T. Wayland). [Fossil corals collected by R. T. Hill in Costa Rica.]
Harvard Coll., Mus. Comp. Zool., Bull., vol. xxviii, p. 275 (½ p.), 1898.
Names the species determined.

832 —— and **Hill** (R. T.). The Lower Cretaceous Gryphæas of the Texas region.
See Hill (R. T.), and Vaughan (T. W.), No. 356.

833 **Vaughan** (T. Wayland) and **Hill** (R. T.) Geology of the Edwards Plateau and Rio Grande Plain adjacent to Austin and San Antonio, Texas, with reference to the occurrence of underground waters.

See Hill (R. T.) and Vaughan (T. W.), No. 355.

834 —— —— Nueces folio, Texas.

See Hill (R. T.) and Vaughan (T. W.), No. 357.

835 **Veatch** (Arthur C.). Notes on the Ohio Valley in southern Indiana.

Jour. of Geol., vol. vi, pp. 257-272, 12 figs., 1898.

Describes the physiographic features of Spencer County, the occurrence and character of Tertiary strata and of the loess, and the oscillations evidenced by these deposits.

836 —— An old river channel in Spencer County [Indiana].

Ind. Acad. Sci., Proc., 1897, pp. 266-271, with geologic map and sections, 1898.

Describes the physiography of the region and the occurrence of a river channel, as shown by well records. Discusses its probable Tertiary age.

837 **Vermeule** (C. C.). Notes and data pertaining to the physical geography of the State [New Jersey].

N. J. Geol. Surv., Final Rept., vol. iv, 189 pp., 1898.

Gives notes on the latitude and longitude of places, elevations, etc.

838 **Wade** (W. M.). Copper mining at Kamloops, British Columbia.

Eng. and Mg. Jour., vol. lxvi, pp. 698-699, 1898.

Gives brief notes on the occurrence of copper.

839 **Wadsworth** (M. E.). The origin and mode of occurrence of the Lake Superior copper deposits.

Am. Inst. Mg. Engrs., Trans., vol. xxvii, pp. 669-696, 1898.

Discusses the phenomena of the alteration of rock masses, the formation of ore deposits, and the character and relations of the Keweenawan and Potsdam series and the lava flows.

840 —— Some methods of determining the positive or negative character of mineral plates in converging polarized light with the petrographical microscope.

Am. Geol., vol. xxi, pp. 170-175, 1898.

841 —— Zirkelite—a question of priority.

Jour. of Geol., vol. vi, pp. 199-200; Am. Jour. Sci., 4th ser., vol. v, p. 153; Am. Geol., vol. xxi, pp. 133-134, 1898.

Discusses the use of the term in mineralogy and petrology.

842 **Wagner** (George). On some turtle remains from the Fort Pierre.

Kan. Univ. Quart., vol. vii, pp. 201-203, 2 figs., 1898.

Describes portions of Toxochelys latiremis Cope.

843 **Walcott** (Charles Doolittle). Report of the Director of the U. S. Geological Survey for the fiscal year ending June 30, 1898.

U. S. Geol. Surv., 19th Ann. Rept., Pt. I, 422 pp., pls. i–ii, 1898.

Gives a general review of the work undertaken by the Survey during the year 1897–98.

844 —— Fossil Medusæ.

U. S. Geol., Surv., Mon. XXX, 198 pp., pls. i–xlvii, figs. 1–26; Review by H. S. Williams, Am. Jour. Sci., 4th ser., vol. vi, p. 509, 1898.

Describes the occurrence and preservation of Medusæ, and the characters of the forms from the Middle and Lower Cambrian, Jurassic, and Permian strata.

845 —— Note on the brachiopod fauna of the quartzitic pebbles of the Carboniferous conglomerates of the Narragansett Basin, Rhode Island.

Am. Jour. Sci., 4th ser., vol. vi, pp. 327–328, 1898.

Names the Cambrian fossils found in the pebbles and discusses the evidence as to the locality from which the pebbles were derived.

846 **Walker** (T. L.). Causes of variation in the composition of igneous rocks.

Am. Jour. Sci., 4th ser., vol. vi, pp. 410–415, 1898.

Discusses various theories on the subject.

847 **Ward** (L. F.). A new fossil Eucalyptus from Kansas.

The Plant World, vol. i, pp. 75–76, 2 figs., 1898.

Describes Eucalyptus gouldii n. sp.

848 **Warren** (C. H.). Mineralogical notes.

Am. Jour. Sci., 4th ser., vol. vi, pp. 116–124, figs. 1–11; Review, Am. Geol., vol. xxii, p. 379 (½ p.), 1898.

Describes the occurrence of melanotekite and kentrolite, pseudomorphs after phenacite, crystallized tapiolite and tantalite, and cobaltiferous smithsonite.

849 **Washington** (Henry S.). Sölvsbergite and tinguaite from Essex County, Massachusetts.

Am. Jour. Sci., 4th ser., vol. vi, pp. 176–187; Review, Am. Geol., vol. xxii, p. 380 (½ p.), 1898.

Describes and compares their chemical composition with that of material from other localities.

850 —— The Jerome (Kansas) meteorite.

Am. Jour. Sci., 4th ser., vol. v, pp. 447–454; Review, Am. Geol., vol. xxii, p. 377 (½ p.), 1898.

Describes the microscopic and chemical characters of the material.

851 —— The petrographical province of Essex County, Massachusetts. I.

Jour. of Geol., vol. vi., pp. 787–808, 1898.

Describes the characters of granite, akerite, nordmarkite, nepheline-syenite and pulaskitic syenite. Includes a number of chemical analyses.

852 **Watson** (Thomas L.). A preliminary petrographic report on metamorphic rocks in and around Dahlonega, Lumpkin County, Georgia.

Ga. Geol. Surv., Bull. No. 4–A, pp. 320–330, 1898.

Describes the schists and basic rocks of the region.

853 —— Weathering of diabase near Chatham, Virginia.

Am. Geol., vol. xxii, pp. 85–101, 1898.

Describes the petrographic character of the rock, gives chemical analyses of the fresh and weathered material, and discusses the process of decay in the rock weathering.

854 **Weed** (Walter Harvey). See **Diller** (J. S.), No. 234.

855 —— and **Pirsson** (Louis Valentine). Geology and mineral resources of the Judith Mountains of Montana.

U. S. Geol. Surv., 18th Ann. Rept., Pt. III, pp. 446–616, pls. lxi–lxxxvi figs. 32–54, 1898.

Describes the physiography, geologic history, occurrence, and character of the Paleozoic and Mesozoic rocks, the detailed geology, character, and occurrence of the igneous rocks, the dynamic and structural geology and the mineral resources of the region.

856 —— —— Geology of the Castle Mountain mining district, Montana.

Review, Zeit. für. prak. Geol., 1898, heft 9, pp. 330–331, 1898.

See Bibliography and Index for 1896, No. 723.

857 **Weeks** (Fred Boughton). Bibliography and index of North American geology, paleontology, petrology, and mineralogy for 1897.

U. S. Geol. Surv., Bull. No. 156, 130 pp., 1898.

Contains list of titles of papers arranged alphabetically by authors' names and a subject index.

857*a* **Weidman** (Samuel). A contribution to the geology of the pre-Cambrian igneous rocks of the Fox River Valley, Wisconsin.

Wis. Geol. and Nat. Hist. Surv. Bull. No. III, Sci. Ser., No. 2, pp. 1–63, pls. i–x, figs. 1–13, 1898.

Describes the geologic features of the region and the petrographic characters of the igneous rocks. Includes a geologic map.

858 —— See **Diller** (J. S.), No. 234.

859 **Weller** (Stuart). A bibliographic index of North American Carboniferous invertebrates.

U. S. Geol. Surv., Bull. No. 153, 653 pp., 1898.

Contains a chronologic catalogue of papers, a list of authors, a summary of classes and genera, and an alphabetical list of genera and species, with bibliographic references.

860 **Weller** (Stuart). The Batesville sandstone of Arkansas.

N. Y. Acad. Sci., Trans., vol. xvi, pp. 251–282, pls. xix–xxi: Review by C. R. Keyes, Am. Geol., vol. xxi, pp. 129–131, 1898.

Reviews the literature on the formation, describes fossils recently collected, and discusses its correlation from the paleontologic and stratigraphic data.

861 —— Description of a new species of Hydreionocrinus from the Coal Measures of Kansas.

N. Y. Acad. Sci., Trans., vol. xvi, pp. 372–374, pl. xxxvi, 1898.

862 —— Description of Devonian crinoids and blastoids from Milwaukee, Wisconsin.

N. Y. Acad. Sci., Annals, vol. xi, pp. 117–124, pl. xiv, 1898.

Gives a brief account of the Devonian rocks and a description of several new species.

863 —— [Review of "Fourteenth Annual Report of the New York State Geologist for 1894."]

Jour. of Geol., vol. vi, pp. 205–207, 1898.

864 —— Classification of the Mississippian series.

Jour. of Geol., vol. vi, pp. 303–314, figs. A–B, 1898.

Discusses the principles of geologic classification; describes the geologic history prior to and during the formation of the Mississippian series and the character of the fauna and physical changes of the Osage epoch.

865 —— The Silurian fauna interpreted on the epicontinental basis.

Jour. of Geol., vol. vi, pp. 692–703, 2 figs., 1898.

Discusses the character of the movement at the close of the Ordovician, the distribution of Silurian sediments, and the connection between the Silurian waters of Europe and America; compares the fauna of the two regions.

866 —— [Review of "The Naples fauna (fauna with Manticoceras intumescens) in western New York," by John M. Clarke.]

Jour. of Geol., vol. vi, pp. 855–857, 1898.

867 —— Osage vs. Augusta.

Am. Geol., vol. xxii, pp. 12–16, 1898.

Discusses the nomenclature of the Mississippian series.

868 **Wells** (J. Walter). The mispickel ores of Deloro, Ontario.

Federated Can. Mg. Inst., Jour., vol. ii, pp. 127–133, 1897.

Describes the character and occurrence of the gold-bearing veins.

869 **Wheeler** (H. A.). Clay deposits [Missouri].

Mo. Geol. Surv., vol. xi, 622 pp., 39 pls., 15 figs., 1896; Abstract, Eng. and Mg. Jour., vol. lxvi, pp. 426–427, 1898.

Describes character, origin, and classification of clay, its chemical and physical properties, and the occurrence of clay in various parts of Missouri.

870 **White** (David). Omphaloploios, a new Lepidodendroid type.

Geol. Soc. Am., Bull., vol. ix, pp. 329–342, pls. 20–23; Abstract, Science, new ser., vol. vii, p. 80 (10 l.), 1898.

Describes material from the Lower Coal Measures of Missouri and the characters of Lepidodendron cyclostigma.

871 —— The probable age of the McAlister coal group.

Science, new ser., vol. vii, p. 612 (⅛ p.), 1898.

Contains summary of paper read before the Geological Society of Washington.

872 —— and **Schuchert** (Charles). Cretaceous series of the west coast of Greenland.

Geol. Soc. Am., Bull., vol. ix, pp. 343–368, pls. 24–26; Abstract, Science, new ser., vol. vii, pp. 52–53 (½ p.); Review, Nat. Sci., vol. xiii, pp. 230–232, 1898.

Describes the general geologic features of the region and gives lists of fossils collected from the various localities.

873 **White** (I. C.). The Pittsburg coal bed.

Am. Assoc. Adv. Sci., Proc., vol. xlvi, pp. 187–198; Am. Geol., vol. xxi, pp. 49–60; Review, Zeit. für prak. Geol., 1898, heft 7, pp. 250–251, 1898.

Discusses the age of the coal bed and describes its structure and the lithologic character of the associated strata.

874 **White** (Theodore G.). A contribution to the petrography of the Boston Basin [Massachusetts].

Boston Soc. Nat. Hist., Proc., vol. xxvii, pp. 117–156, 5 pls., 1897.

See Bibliography and Index for 1897, No. 686.

875 **Whiteaves** (J. F.). On some fossil cephalopods in the Museum of the Geological Survey of Canada, with descriptions of eight new species that appear to be new. From the Cambro-Silurian rocks of the Provinces of Quebec, Ontario, and Manitoba.

Ottawa Nat., vol. xii, pp. 116–127, 1898.

876 —— Note on a fish tooth from the Upper Arisaig series of Nova Scotia.

Brit. Assoc. Adv. Sci., Report 1897, pp. 656–657, 1898.

Discusses its bearing on the age of the beds.

877 **Whitfield** (R. P.). Assisted by E. O. Hovey. Catalogue of the type and figured specimens in the paleontological collections of the geological department, American Museum of Natural History.

Am. Mus. Nat. Hist., Bull., vol. xi, pp. i–vii, 1–71, 1898.

878 —— Observations on the genus Barretia.

Abstract, Am. Assoc. Adv. Sci., Proc., vol. xlvi, p. 200 (8 l.), 1898.

See Bibliography and Index for 1897, No. 693.

879 **Whitten** (W. M.). "Quicksand pockets" in the "blue clay" of South Bend [Indiana].
Ind. Acad. Sci., Proc. 1897, pp. 234–240, 3 figs., 1898.
Describes local features of the drift.

880 **Whittle** (Charles L.). The clays and clay industries of Massachusetts.
Eng. and Mg. Jour., vol. lxvi, pp. 245–246, 1898.
Includes notes on the occurrence and distribution of clay deposits in Massachusetts.

881 —— The building and road stones of Massachusetts.
Eng. and Mg. Jour., vol. lxvi, pp. 336–337, 1898.
Describes their general character and occurrence.

882 **Wieland** (George R.). The Protostegan Plastron.
Am. Jour. Sci., 4th ser., vol. v, pp. 15–20, pl. ii, figs. 1–2, 1898.
Describes material from the Cretaceous of South Dakota.

883 **Wilkens** (H. A. J.), **Nitze** (Henry B. C.) and. Gold mining in North Carolina and adjacent southern Appalachian regions.
See Nitze (H. B. C.) and Wilkens (H. A. J.), No. 579.

884 **Williams** (Albert, jr.). Faults.
Mines and Minerals, vol. xviii, pp. 298–301, 10 figs., 1898.
Describes the results of faulting and discusses the origin of faults.

885 **Williams** (E. H., jr.). [Geology and its relations to topography.]
Am. Soc. Civil Engrs., Trans., vol. xxxix, pp. 84–86, 1898.
In discussion of paper by John C. Branner on the same subject.

886 —— Notes on Kansan drift in Pennsylvania.
Am. Phil. Soc., Proc., vol. xxxvii, pp. 84–87, 1 fig., 1898.
Discusses certain glacial phenomena and describes the drift at East Warren, Pennsylvania.

887 **Williams** (Henry Shaler). The classification of stratified rocks.
Jour. of Geol., vol. vi, pp. 671–678, 1898.
Describes the work of the International Congress of Geologists and the U. S. Geological Survey in adjusting classifications and nomenclatures to a common scheme.

888 —— [Review of "Volcanoes of North America; a reading lesson for students of geography and geology," by Israel C. Russell.]
Am. Jour. Sci., 4th ser., vol. v, pp. 74–75, 1898.

889 —— [Review of "Geology of Johnson County, Iowa," by Samuel Calvin.]
Am. Jour. Sci., 4th ser., vol. v, pp. 149–151, 1898.

890 —— [Review of "Earth movement," by Charles R. Van Hise.]
Am. Jour. Sci., 4th ser., vol. v, pp. 230–231, 1898.

891 —— [Review of "The development of Glyphioceras and the phylogeny of the Glyphioceratidæ," by James Perrin Smith.]
Am. Jour. Sci., 4th ser., vol. v, p. 315, 1898.

892 **Williams** (Henry Shaler). [Review of "Fossil Medusæ," by Charles D. Walcott.]
Am. Jour. Sci., 4th ser., vol. vi, p. 509, 1898.

893 —— [Review of "Report on the geology of southwest Nova Scotia, etc."]
Am. Jour. Sci., 4th ser., vol. vi, p. 510 (½ p.), 1898.

894 **Willis** (Bailey). Some coal fields of Puget Sound [Washington].
U. S. Geol. Surv., 18th Ann. Rept., Pt. III, pp. 399–436, pls. lii–lxviii, figs. 26–31, 1898.
Describes the physiography, stratigraphic succession, and structure of the region, discusses the age of the beds, and gives an account of the occurrence of coal.

895 —— Stratigraphy and structure of the Puget group, Washington.
Abstract, Geol. Soc. Am., Bull., vol. ix, pp. 2–6, 1897.
Describes the physiography of the region and the stratigraphy and structure of the Puget group. See Bibliography and Index for 1897, No. 699.

896 —— Drift phenomena of Puget Sound [Washington].
Geol. Soc. Am., Bull., vol. ix, pp. 111–162, pls. 6–10, 1898; Review by W. M. Davis, Science, new ser., vol. vii, pp. 704–705 (½ p.), 1898.
Describes the physiography and Glacial phenomena and deposits of the region.

897 —— Drift phenomena of Puget Sound and their interpretation.
Brit. Assoc. Adv. Sci., Rept. 1897, p. 653 (¾ p.), 1898.

898 —— [Contribution to a "Symposium of the classification and nomenclature of geologic time divisions."]
Jour. of Geol., vol. vi, pp. 345–347, 1898.

899 —— [Review of "The principles of pre-Cambrian geology" by C. R. Van Hise.]
Jour. of Geol., vol. vi, pp. 419–431, 1898.

900 —— See **Diller** (J. S.), No. 234.

901 **Williston** (S. W.). The Upper Cretaceous of Kansas. A historical review. Addenda.
Kan. Univ. Geol. Surv., vol. iv, pp. 28–32, pls. i–iv, 1898.
Gives an account of the work of various parties that have collected fossils from the Cretaceous beds of Kansas.

902 —— Birds, Dinosaurs, Crocodiles, Mosasaurs, and Turtles [Cretaceous].
Kan. Univ. Geol. Surv., vol. iv, pp. 41–411, pls. v–lxxxiv, 1898.
Gives a general description of the various genera and also includes descriptions of many species.

903 —— The Pleistocene of Kansas.
Kan. Acad. Sci., Trans., vol. xv, pp. 90–94, 1898.
Gives a list and description of Pleistocene vertebrates in Kansas and describes the occurrence of the Equus beds.

904 **Williston** (S. W.). Notice of some vertebrate remains from the Kansas Permian.

Kan. Acad. Sci., Trans., vol. xv, pp. 120–122, 1898.

Describes fragments of Cricotus and Clepsydrops Cope. Considers the red beds Triassic.

905 —— The sacrum of Morosaurus.

Kan. Univ. Quart., vol. vii, pp. 173–175, 2 figs., 1898.

Describes material from Converse County, Wyoming.

906 —— [On the genus Platecarpus].

Kan. Univ. Quart., vol. vii. Editorial notes, p. 235, 1898.

Describes recently discovered material.

907 —— [Contribution to "A symposium of the classification and nomenclature of geologic time divisions."]

Jour. of Geol., vol. vi, pp. 342–345, 1898.

908 —— Miocene Edentates.

Science, new ser., vol. viii, p. 132 (½ p.), 1898.

Refers to an error of Prof. Cope.

909 **Willmot** (A. B.). Notes on the Michipicoton gold field [Ontario].

Federated Can. Mg. Inst., Jour., vol. iii, pp. 100–102, 1898.

Contains brief notes on the gold ores north of Lake Superior.

910 **Wilson** (Herbert M.). Topography of Mexico.

Am. Geogr. Soc., Bull., vol. xxix, pp. 249–260, with map, 1897.

Review by W. M. Davis, Science, new ser., vol. vii, p. 125 (½ p.), 1898.

911 **Wilson** (J. W.). Geology of Effingham Ridge. Preliminary report [Kansas].

Kan. Acad. Sci., Trans., vol. xv, pp. 113–114, 1898.

Describes the occurrence of Carboniferous rocks and Glacial drift.

912 **Wilson** (W. J.). Notes on the Pleistocene geology of a few places in the Ottawa Valley [Canada].

Ottawa Nat., vol. xi, pp. 209–220, 1898.

Describes the glacial geology of the region.

913 **Winchell** (Horace V.). The Lake Superior iron ore region, U. S. A.

Excerpt from the Federation Institution of Mg. Engrs., Trans., 70 pp., 7 figs., London, 1897; Review, Zeit. fur prak. Geol., 1898, heft 6, pp. 207–212, 1898.

Gives a historical sketch of the region, a discussion of the geologic features and of the genesis of the ore deposits, and the classification of the pre-Silurian rocks.

914 —— On the occurrence of cubanite at Butte, Montana.

Am. Geol., vol. xxii, pp. 245 (⅓ p.), 1898.

Describes its character and occurrence.

915 **Winchell** (Newton H.). [Geology and its relations to topography.]

Am. Soc. Civil Engrs., Trans., vol. xxxix, pp. 83–84, 1898.

In discussion of paper by John C. Branner on the same subject.

916 **Winchell** (Newton H.). The determination of the feldspars.

Am. Geol., vol. xxi, pp. 12–49, 28 figs., 1898.

Discusses methods of determining feldspars.

917 —— [Review of "Volcanoes of North America; a reading lesson for students of geography and geology," by Israel C. Russell.]

Am. Geol., vol. xxi, pp. 65–66, 1898.

918 —— Some resemblances between the Archean of Minnesota and Finland.

Am. Geol., vol. xxi, pp. 222–229, 1898.

Describes the succession of the Archean series in Minnesota and compares them with the Archean of Finland.

919 —— The significance of the fragmental eruptive débris at Taylors Falls, Minnesota.

Am. Geol., vol. xxii, pp. 72–78, 1898.

Describes the occurrence of two beds of conglomerate and their age and relation to the igneous rocks. Notes similar occurrences at other localities.

920 —— The question of the differentiation of magmas.

Am. Geol., vol. xxii, editorial comment, pp. 113–123, 1898.

Reviews the literature of the subject and gives the writer's views.

921 —— Note on the characters of mesolite from Minnesota.

Am. Geol., vol. xxii, pp. 228–230, 1898.

Describes the microscopic characters of the material.

922 —— The origin of the Archean igneous rocks.

Am. Geol., vol. xxii, pp. 299–310; Abstracts, Am. Assoc. Adv. Sci., Proc., vol. xlvii, pp. 303–304; Science, new ser., vol. viii, pp. 504–505 (½ p.), 1898.

Reviews previous discussions of the subject and gives the author's views.

923 —— Thomsonite and lintonite from the north shore of Lake Superior.

Am. Geol., vol. xxii, pp. 347–349, 1898.

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924 —— The oldest known rock.

Abstract, Am. Assoc. Adv. Sci., Proc., vol. xlvii, pp. 302–303; Science, new ser., vol. viii, p. 504 (½ p.), Am. Geol., vol. xxii, pp. 262–263 (½ p.), 1898.

Describes certain greenstones and associated rocks.

925 **Winslow** (Arthur). A natural bridge in Utah.

Science, new ser., vol. vii, pp. 557–558, 2 figs., 1898.

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926 **Wolff** (J. E.). Petrography [vicinity of Boston, Mass.].

Am. Assoc. Adv. Sci., Fiftieth Anniversary Meeting. Guide to localities illustrating the geology, marine zoology, and botany of the vicinity of Boston. Edited by A. W. Grabau and J. E. Woodman, p. 63, Salem, Mass., 1898.

Gives a brief note on the petrographic features of the region.

927 **Wolff** (J. E.). The relation of the granite to the ore deposits at Franklin Furnace, New Jersey.

Science, new ser., vol. viii, p. 560 (½ p.), 1898.

Contains summary of paper read before the geological conference of Harvard University.

928 —— Preliminary descriptions of the specimens of igneous rocks in the collections from the Isthmus of Panama and Costa Rica, made by Robert T. Hill.

Harvard Coll., Mus. Comp. Zool., Bull., vol. xxviii, pp. 276–281, 1898.

Includes brief description of the petrographic characters of the specimens.

929 —— Occurrence of native copper at Franklin Furnace, New Jersey.

Am. Acad. Arts and Sci., Proc., vol. xxxiii, pp. 430–431, 1898.

930 —— See **Diller** (J. S.), No. 234.

931 —— and **Brooks** (Alfred Hulse). The age of the Franklin white limestone of Sussex County, New Jersey.

U. S. Geol. Surv., 18th Ann. Rept., Pt. II, pp. 431–457, pl. lxxxiii, figs. 77–81, 1898; Abstract, Geol. Soc. Am., Bull., vol. viii, p. 397, 1897.

Gives a review of previous opinions, a description of the lithologic character and structure of the formation, and summary and conclusions.

932 **Woodman** (J. E.). Geology: North shore [vicinity of Boston, Mass.].

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Describes the geologic features of the region and gives lists of papers on its geology.

933 **Woolman** (Lewis). Artesian wells in New Jersey.

N. J. Geol. Surv., Ann. Rept., 1897, pp. 211–295, 1898.

Gives sections of many artesian wells.

934 —— Fossil mollusks and diatoms from the Dismal Swamp, Virginia and North Carolina: indication of the geological age of the deposits; with notes on the diatoms by Charles C. Boyer.

Phil. Acad. Nat. Sci., Proc., 1898, pp. 414.

Describes the occurrence of the fossils, gives lists of those determined, and discusses the age of the beds.

935 **Wortman** (J. L.). The extinct Camelidæ of North America and some associated forms.

Am. Mus. Nat. Hist., Bull., vol. x, pp. 93–142, pl. xi, 23 figs., 1898.

Includes a review of the genera and species of North American Tylopoda, a description of new material, and a discussion of the various steps in their evolution and of certain osteological characters.

936 **Wright** (G. Frederick). Supposed "corduroy road" of late glacial age at Amboy, Ohio.

Abstracts, Am. Assoc. Adv. Sci., Proc., vol. xlvii, p. 298 (½ p.); Science, new ser., vol. viii, p. 470 (½ p.); Am. Geol., vol. xxii, p. 259 (½ p.), 1898.

937 —— The age of Niagara Falls, as indicated by the erosion at the mouth of the gorge.

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938 —— A recently discovered cave of celestite crystals at Put-in-Bay, Ohio.

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939 —— Clayey bands of the glacial delta of the Cuyahoga River at Cleveland, Ohio, compared with those in the implement-bearing deposits of the glacial delta at Trenton, N. J.

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940 —— Glacial observations in the Champlain-St. Lawrence Valley.

Am. Geol., vol. xxii, pp. 333–334, 1898.

Describes recent observations by the author.

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941 **Yeates** (W. S.), **McCallie** (S. W.), and **King** (Francis P.). A preliminary report on a part of the gold deposits of Georgia.

Ga. Geol. Surv., Bull. No. 4–A, 542 pp., 21 pls., 38 figs., 1898.

Describes the occurrence of gold ores in the State, including local details of mines.

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The papers in the foregoing bibliography which have the following numbers were printed in 1895, 1896, and 1897, or bear one of these dates. A few were overlooked in compiling the literature of those years (Bulletins 146, 149, and 156), but the greater portion were not received in time to be incorporated therein:

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Becket gneiss, Emerson, No. 258.
Bed rock series, Turner, No. 776.
Belchertown tonalite, Emerson, No. 258.
Bells Landing, Harris, No. 334.
Bellvale flags, Ries, No. 658.
Belly River beds, Knowlton, No. 453.
Benton, Bain, No. 37.
Benton, Darton, No. 194.
Berlin rhyolite-gneiss, Weidman, No. 857a.
Bernardston formation, Emerson, No. 258.
Bethany limestone, Bain, Nos. 36, 39.
Bethany limestone, Keyes, No. 424.
Bethany limestone, Marbut, Nos. 519, 520.
Birch Creek series, Emmons, No. 260.
Black River, Ells, No. 256.
Blackrock diabase, Emerson, No. 258.
Black shale, Girty, No. 299.
Black shale, Keyes, No. 415.
Black shale, Shepard, No. 698.
Bluefield shale, Campbell, No. 127.
Bluestone formation, Campbell, No. 127.
Boone chert, Drake, No. 239.
Border conglomerate, Kümmel, No. 456.
Boston group, Drake, No. 239.
Bowling Green limestone, Keyes, No. 431.
Breathitt formation, Campbell, No. 129.
Bridger group, Osborn, No. 585.
Bridgeton formation, Salisbury, No. 682.
Brunswick beds, Kümmel, No. 456.
Bryant limestone, Keyes, No. 431.
Buchanan, Beyer, No. 76.
Buchanan, Leverett, No. 487.
Buchanan gravel, Calvin, Nos. 121, 123, 124, 126.
Buffalo shale, Keyes, No. 431.
Bujio formation, Hill, No. 352.
Burlingame limestone, Haworth, No. 335.
Burlingame shale, Beede, No. 65.
Burlington formation, Marbut, No. 521.
Burlington limestone, Lower, Shepard, No. 698.
Burlington limestone, Upper, Shepard, No. 698.
Calaveras formation, Turner, No. 776.
Calciferous, Cushing, No. 182.
Calciferous, Ells, No. 256.
Calhoun limestone, etc., Beede, No. 65.
Callaway limestone, Keyes, Nos. 415, 431.

Geologic Formations Described—Continued.
Cap-au-gres sandstone, Keyes, No. 431.
Cape Cod series, Shaler, No. 695.
Cape May formation, Salisbury, No. 682.
Cavaniol group, Drake, No. 239.
Cedar formation, Turner, No. 776.
Cedar Valley stage, Calvin, Nos. 120, 121, 124.
Ceratops beds, Marsh, No. 523.
Chalk Mountain nevadite, Emmons, No. 259.
Chattanooga shale, Campbell, Nos. 128, 129.
Chazy, Bell, No. 68.
Chazy, Cushing, No. 182.
Chazy, Ells, No. 256.
Chemung, Ries, Nos. 658, 659.
Chemung group, Luther, No. 505.
Chemung series, Prosser, No. 642.
Cherokee shale, Crane, No. 167.
Cherokee shale, Marbut, Nos. 517, 518, 520.
Cherokee shales, Haworth, No. 335.
Cherokee shales, Keyes. No. 425.
Cherryville shale, Haworth, No. 335.
Cheshire quartzite, Emerson, No. 258.
Chester amphibolite, Emerson, No. 258.
Cheyenne sandstones, Gould, No. 308.
Chickamauga limestone, Campbell, No. 127.
Chico formation, Fairbanks, No. 262.
Chicopee shale, Emerson, No. 258.
Chocolate limestone, Beede, No. 65.
Chouteau limestone, Shepard, No. 698.
Churchill sandstone, Tyrrell, No. 784.
Cimarron series, Adams, No. 10.
Cimarron series, Jones. No. 397.
Clearwater shale, Tyrrell, No. 786.
Clinch sandstone, Campbell, No. 127.
Clinton, Bell, No. 68.
Clinton, Ries, No. 659.
Clinton formation, Foerste, No. 273.
Clinton limestone, Blatchley and Ashley, No. 93.
Clinton shale, Luther, No. 505.
Coal Measures, Drake, No. 239.
Coal Measures, Keyes, No 418.
Coatzacoalcos formation, Spencer, No. 726.
Colorado, Bain, No. 37.
Colorado formation, Todd, Nos. 769, 773.
Colorado formation, Spurr, No. 789a.
Columbia formation, Spencer, Nos. 726, 730.
Comanche Peak formation, Hill and Vaughan. No. 537.
Comanche series, Gould, No. 308.
Como group, Knight, No. 446.
Conodont bed, Grabau, No. 312.
Conway schist, Emerson, No. 258.
Corbin conglomerate lentil, Campbell, Nos. 128, 129.
Corniferous, Blatchley and Ashley, No. 93.
Corniferous limestone, Bishop, No. 80.
Corniferous limestone, Luther, No. 505.
Cottonwood limestone, Keyes, No. 424.
Couchiching, Coleman, No. 161.
Crosswicks clay, Clark, No. 152.
Crystal sandstone, Keyes, No. 415.
Cuchara beds, Osborn, No. 585.
Culebra clay, Hill, No. 352.
Dakota, Bain, Nos. 34, 37.
Dakota, Darton, No. 194.

Geologic Formations Described—Continued.
Dakota formation, Spurr, No. 739a.
Dakota formation, Todd, No. 769.
Dakota group, Gould, No. 308.
Dakota sandstone, Beede, No. 67.
Dakota sandstone, Marsh, No. 524.
Deer Creek limestone, Haworth, No. 335.
De Kalb limestone, Bain, No. 39.
Delaware stage, Calvin, No. 123.
Del Rio clay, Hill and Vaughan, No. 357.
Des Moines, Bain, Nos. 34, 36, 39.
Des Moines, Keyes, No. 435.
Des Moines, Leonard, No. 483.
Des Moines, Tilton and Bain, No. 766.
Des Moines series, Keyes, Nos. 415, 418, 430.
Des Moines series, Shepard, No. 698.
Des Moines stage, Beyer, No. 76.
Des Moines stage, Calvin, No. 120.
Des Moines stage, Marbut, Nos. 520, 521.
Dismal formation, Campbell, No. 127.
Dotson sandstone, Campbell, No. 127.
Douty gravel, Willis, No. 896.
Dover shale and sandstone, Beede, No. 65.
Dresbach shale, Berkey, No. 74.
Dundee limestone, Sherzer, No. 699.
Earlham limestone, Bain, No. 39.
Earlton limestone, Haworth, No. 335.
Edwards formation, Hill and Vaughan, No. 357.
Ekmont limestone, Beede, No. 65.
Elgin sandstone, Haworth, No. 335.
Elk Falls limestone, Haworth, No. 335.
Elk Mountain porphyry, Emmons, No. 259.
Empire limestone, Bagg, No. 26.
Empire limestone, Dall, No. 186.
Empire limestone, Hill, No. 352.
Encrinal limestone, Grabau, No. 312.
Equus beds, Williston, No. 903.
Erie limestone, Haworth, No. 335.
Esopus, Ries, No. 658.
Eureka limestone, Haworth, No. 335.
Eureka shale, Drake, No. 239.
Eureka shale, Shepard, No. 698.
Fayette breccia, Calvin, Nos. 120, 124.
Fayetteville shale, Drake, No. 239.
Flathead quartzite, Griswold, No. 321.
Flanagan chert, Campbell, No. 128.
Florencia formation, Pilsbry, No. 628.
Folley limestone, Keyes, No. 431.
Forbes limestone, Keyes, No. 424.
Fordham gneiss, Merrill, No. 548.
Fort Riley horizon, Cummins, No. 180.
Fort Worth limestone, Hill and Vaughan, No. 357.
Fortymile series, Emmons, No. 260.
Franciscan series, Turner, No. 777.
Franconia sandstone, Berkey, No. 74.
Franklin white limestone, Wolff and Brooks. No. 931.
Fredericktown dolomite, Keyes, No. 415.
Galena limestone, Blatchley and Ashley, No. 92.
Galena series, Sardeson, No. 686.
Gallatin, Griswold, No. 321.
Garnett limestone, Haworth, No. 335.
Garrard sandstone, Campbell, No. 128.

Geologic Formations Described—Continued.
Gatun beds, Dall, No. 186.
Gatun formation, Hill, No. 352.
Genesee shale, Blatchley, No. 88.
Genesee shale, Blatchley and Ashley, No. 92.
Genesee shale, Girty, No. 299.
Genesee shale, Grabau, No. 312.
Genesee shale, Lincoln, No. 490.
Genesee slate, Bishop, No. 80.
Genesee slate, Luther, No. 505.
Giles formation, Campbell, No. 127.
Girardeau limestone, Keyes, No. 415.
Glen Rose formation, Hill and Vaughan, No. 357.
Golden Gate series, Fairbanks, No. 262.
Golden Gate series, Turner, No. 777.
Goniatite limestone, Luther, No. 505.
Goshen schist, Emerson, No. 258.
Granby tuff, Emerson, No. 258.
Grand Rapids sandstone. Tyrrell, No. 786.
Grand Tower limestone, Keyes. 415.
Graydon sandstone, Shepard, No. 698.
Greenbrier limestone, Campbell, No. 127.
Greenleaf sandstone, Gould, No. 308.
Greggs Landing, Harris, No. 334.
Guallava beds, Hill, No. 352.
Gunnison formation, Spurr, No. 739a.
Gwynedd shale, Lyman, No. 507.
Hamilton, Blatchley and Ashley, No. 92.
Hamilton, Ries, Nos. 658, 659.
Hamilton group, Bishop, No. 80.
Hamilton group, Luther, No. 505.
Hamilton series, Prosser, No. 642.
Hamilton shale, Bishop, No. 80.
Hamilton shale, Grabau, No. 312.
Hamilton shale, Lincoln, No. 490.
Hampden diabase, Emerson, No. 258.
Hannibal shale, Shepard, No. 698.
Hardistonville quartzite, Wolff and Brooks, No. 931.
Harrison diorite, Merrill, No. 548.
Hatchetigbee, Harris, No. 334.
Hawley schist, Emerson, No. 258.
Hazlet sand, Clark, No. 152.
Henrietta limestone, Keyes, No. 435.
Henrietta limestone, Marbut, Nos. 517, 518, 519, 520.
Highbridge limestone, Campbell, No. 128.
Hinton formation, Campbell, No. 127.
Holyoke diabase, Emerson, No. 258.
Hoosac schist, Emerson, No. 258.
Honaker limestone, Campbell, No. 127.
Howard limestone, Haworth, No. 335.
Hudson River, Bell, No. 68.
Hudson River, Blatchley and Ashley, No. 92.
Hudson River, Ries, No. 658.
Hudson shale, Keyes, No. 415.
Huerfano series, Osborn, No. 585.
Huronian, Bell, No. 68.
Huronian, Coleman, No. 161.
Huronian, Ells, No. 253.
Illinoian till, Leverett, Nos. 487, 488.
Independence limestone, Haworth, No. 335.
Independence shale, Calvin, No. 124.
Inwood limestone, Merrill, No. 548.
Iola limestone, Haworth, No. 335.

Geologic Formations Described—Continued.
Iola limestone, Keyes, No. 424.
Iowa, Calvin, No. 124.
Iowan, Beyer, No. 76.
Iowan, Calvin, No. 123.
Iowan drift, Calvin, Nos. 120, 121.
Iowan loess, Bain, No. 34.
Iowan loess, Leverett, No. 487.
Iowan loess, Pilsbry, No. 628.
Irvine formation, Campbell, No. 128.
Ithaca group, Clarke, No. 155.
Jennings shale, Spencer, No. 723.
Jordan sandstone, Berkey, No. 74.
Kansan, Bain, No. 40.
Kansan, Beyer, No. 76.
Kansan, Calvin, No. 123.
Kansan, Fitzpatrick, No. 272.
Kansan drift, Bain, Nos. 33, 34, 36.
Kansan drift, Calvin, Nos. 120, 121.
Kansan drift, Tilton and Bain, No. 766.
Kansan drift, Williams, No. 886.
Kansan drift, Leonard, No. 483.
Kansas, Calvin, No. 124.
Kansas till, Leverett, No. 488.
Kawishiwin, Winchell, No. 918.
Keewatin, Coleman, No. 161.
Keewatin, Winchell, No. 918.
Kenai series, Emmons, No. 260.
Keokuk group, Broadhead, No. 107.
Keweenawan series, Elftman, No. 250.
Keweenawan series, Wadsworth, No. 839.
Kimberling shale, Campbell, No. 127.
Kinderhook, Beyer, No. 76.
Kinderhook, Calvin, No. 121.
Kinderhook limestone, Marbut, No. 518.
King limestone, Shepard, No. 698.
Kiowa shale, Gould, No. 308.
Kirby clays, Gould, No. 308.
Knobstone, Jones, No. 396.
Knobstone group, Bennett, No. 72.
Knobstone group, Newsom, No. 576.
Knobstone group, Price, No. 641.
Knox dolomite, Campbell, No. 127.
Knoxville beds, Fairbanks, No. 262.
Kome series, White and Schuchert, No. 872.
Labette shale, Crane, No. 167.
Labette shales, Haworth, No. 335.
Lafayette formation, Spencer, No. 726.
Lafayette series, Spencer, No. 730.
La Motte sandstone, Keyes, No. 415.
Lane shales, Haworth, No. 335.
Lansdale shale, Lyman, No. 507.
Laramie, Todd, No. 770.
Laramie formation, Spurr, No. 739*a*.
Laurel limestone, Foerste, No. 273.
Laurentian, Bell, No. 68.
Laurentian, Coleman, No. 161.
Laurentian, Ells, No. 253.
Laurentian, Low, No. 500.
Lawrence shale, Crane, No. 167.
Lawrence shale, Haworth, No. 335.
Lawrence shale, Keyes, No. 424.
Layton formation, Spencer, No. 730.
Leadville limestone, Emmons, No. 259.
Leadville limestone, Spurr, No. 739*a*.
Le Claire limestone, Calvin, No. 120.
Lecompton shale, Haworth, No. 335.
Leda clay, Wilson, No. 912.
Lee formation, Campbell, Nos. 128, 129.
Le Grand beds, Beyer, No. 76.
Leona formation, Hill & Vaughan, No. 357.
Le Seur limestone, Keyes, No. 415.
Lewistown limestone, Spencer, No. 723.
Lexington limestone, Campbell, No. 128.
Leyden argillite, Emerson, No. 258.
Lignitic stage, Harris, No. 334.
Liguanea formation, Spencer, No. 730.
Limon beds, Hill, No. 352.
Lime Creek shale, Calvin, No. 121.
Lincoln porphyry, Emmons, No. 259.
Lockatong series, Kümmel, No. 456.
Loess, Bain, Nos. 35, 36.
Loess, Calvin, Nos. 120, 124.
Loess, Keyes, No. 428.
Loess, Leonard, No. 483.
Loess, Sardeson, No. 687.
Loess, Shimek, No. 700.
Loess, Tilton and Bain, No. 766.
Loess, Todd, No. 768.
Loess, Udden, Nos. 788, 792.
Longmeadow sandstone, Emerson, No. 258.
Louisiana limestone, Keyes, No. 431.
Louisiana limestone, Shepard, No. 698.
Louisville limestone, Foerste, No. 273.
Loup Fork beds, Todd, Nos. 770, 773.
Lower Helderberg, Blatchley, No. 88.
Lower Helderberg, Blatchley and Ashley, No. 92.
Lower Helderberg, Ries, No. 658.
Lower Helderberg group, Lincoln, No. 490.
Lower Helderberg group, Luther, No. 505.
Lowerre quartzite, Merrill, No. 548.
McAlister coal group, White, No. 871.
McCune limestone, Keyes, No. 431.
McHenry formation, Uhler, No. 794.
McNulty rhyolite, Emmons, No. 259.
Madison limestone, Griswold, No. 321.
Magnesian limestone, Blatchley and Ashley, No. 92.
Magnesian limestone, Keyes, No. 415.
Magnesian limestone, Marbut, No. 518.
Magnesian limestone, Shepard, No. 698.
Manasquan formation, Clark, No. 152.
Manhattan schist, Merrill, No. 548.
Maquoketa shale, Calvin, No. 123.
Marble Island quartzite, Tyrrell, No. 784.
Marcellus, Ries, Nos. 658, 659.
Marcellus shale, Bishop, No. 80.
Marcellus shale, Grabau, No. 312.
Marcellus shale, Lincoln, No. 490.
Marcellus shale, Luther, No. 505.
Marcellus shale, Prosser, No. 642.
Maroon formation, Emmons, No. 259.
Maroon formation, Spurr, No. 739*a*.
Marshalltown shale, Beyer, No. 76.
Martinsburg shale, Spencer, No. 723.
Massanutten sandstone, Spencer, No. 723.
Mata Chin formation, Hill, No. 352.
Matanzas series, Spencer, No. 730.
Matawan formation, Clark, No. 152.
Maxville limestone, Weller, No. 860.

Geologic Formations Described—Continued.
Medicine beds, Gould, No. 308.
Medina, Ries, No. 658.
Mentor beds, Jones, No. 395.
Merced formation, Turner, No. 777.
Merced series. Merriam, No. 545.
Merom sandstone, Blatchley and Ashley, No. 92.
Middlefield granitite, Emerson, No. 258.
Mission Creek series, Emmons, No. 260.
Mississippian series, Beyer, No. 76.
Mississippian series, Campbell, No. 129.
Mississippian series, Keyes, Nos. 415, 423, 425, 430, 435.
Mississippian series, Shepard, No. 698.
Mississippian series, Weller, Nos. 860, 867.
Missourian, Bain, Nos. 34, 36, 39.
Missourian, Keyes, No. 435.
Missourian, Leonard, No. 483.
Missourian formation, Tilton and Bain, No. 766.
Missourian series, Keyes, Nos. 415, 418, 424.
Missouri stage, Marbut, No. 520.
Moberly sandstone, Marbut, No. 521.
Moccasin limestone, Campbell, No. 127.
Monkey Hill beds, Dall, No. 186.
Monkey Hill beds, Hill, No. 352.
Monmouth formation, Clark, No. 152.
Monroe shale, Ries, No. 658.
Montana formation, Spurr, No. 739a.
Montana formation, Todd, No. 773.
Monterey series, Fairbanks, No. 262.
Monterey sandstone, Spencer, No. 723.
Moscow shale, Grabau, No. 312.
Mount Laurel sand, Clark, No. 152.
Mount Toby conglomerate, Emerson, No. 258.
Mundi Hill beds, Dall, No. 186.
Mundi Hill beds, Hill, No. 352.
Mound Valley shale, Haworth, No. 335.
Myrtle formation, Diller, No. 235.
Manafalia, Harris, No. 334.
Naples shale, Grabau, No. 312.
Nashaquitsa series, Shaler, No. 695.
Navesink marl, Clark, No. 152.
Neeleytown limestone, Ries, No. 658.
Neocene, Darton, No. 194.
Neocene, Merriam, No. 545.
New Albany shale, Blatchley and Ashley, No. 92.
Newark system, Kümmel, No. 456.
Newman limestone, Campbell, Nos. 128, 129.
New Rochelle serpentine, Merrill, No. 549.
Niagara, Bell, No. 68.
Niagara, Blatchley, No. 88.
Niagara, Ries, No. 659.
Niagara limestone, Blatchley and Ashley, No. 92.
Niagara limestone, Calvin, No. 124.
Niagara limestone, Foerste, No. 273.
Niagara limestone, Luther, No. 505.
Niobrara, Bain, No. 37.
Niobrara, Darton, No. 194.
Noix oolite, Keyes, No. 431.
Nolichucky shale, Campbell, No. 127.
Norristown shale, Lyman, No. 507.
Oakland limestone lentils, Diller, No. 235.

Geologic Formations Described—Continued.
Ocoya Creek formation, Blake, No. 81.
Oneonta sandstone, Clarke, No. 155.
Onondaga, Ries, No. 658.
Onondaga limestone, Bishop, No. 80.
Onondaga limestone, Prosser, No. 642.
Oread limestone, Haworth, No. 335.
Oread limestone, Wilson, No. 911.
Oriskany, Ries, No. 658.
Oriskany sandstone, Lincoln, No. 490.
Oriskany sandstone, Luther, No. 505.
Orting gravel, Willis, No. 896.
Osage, Keyes, Nos. 423, 425.
Osage, Weller, Nos. 864, 867.
Osage City shale, Beede, No. 65.
Osage series, Broadhead, No. 107.
Osage shale, Crane, No. 167.
Osage shale, Haworth, No. 335.
Osceola till and clay, Willis, No. 896.
Osgood limestone, Foerste, No. 273.
Oswegatchie series, Smith, No. 718.
Oswego limestone, Haworth, No. 335.
Ozark, Keyes, No. 423.
Ozark series, Broadhead, Nos. 107, 108.
Panama formation, Hill, No. 352.
Panola formation, Campbell, Nos. 128, 129.
Parting quartzite series, Spurr, No. 739a.
Paso Robles formation, Fairbanks, No. 262.
Patoot series, White and Schuchert, No. 872.
Pawnee limestone, Haworth, No. 335.
Payette formation, Lindgren, Nos. 491, 492.
Pelican sandstone and shale, Tyrrell, No. 786.
Pennington shale, Campbell, Nos. 128, 129.
Pennsylvanian series, Beyer, No. 76.
Pennsylvanian series, Campbell, No. 129.
Pensauken formation, Salisbury, No. 682.
Perkasie shale, Lyman, No. 507.
Perry limestone, Keyes, No. 415.
Phelps sandstone, Shepard, No. 698.
Pierre, Darton, No. 194.
Platte shale, Keyes, No. 424.
Plattsburg limestone, Keyes, No. 424.
Plattsmouth limestone, Keyes, No. 424.
Pleasanton shale, Bain, No. 36.
Pleasanton shale, Crane, No. 167.
Pleasanton shale, Haworth, No. 335.
Pleasanton shale, Keyes, No. 435.
Pleasanton shale, Marbut, Nos. 517, 519, 520.
Pocahontas formation, Campbell, No. 127.
Poison Canyon beds, Osborn, No. 585.
Portage group, Bishop, No. 80.
Portage group, Clarke, Nos. 154, 155.
Portage group, Lincoln, No. 490.
Portage sandstone, Luther, No. 504.
Portage shale, Luther, No. 505.
Poteau group, Drake, No. 239.
Potsdam, Blatchley and Ashley, No. 92.
Potsdam, Cushing, No. 182.
Potsdam, Ells, No. 256.
Potsdam, Wadsworth, No. 839.
Pottstown shale, Lyman, No. 507.
Pre-Kansan drift, Bain, Nos. 33, 40.
Price sandstone, Campbell, No. 127.
Princeton conglomerate, Campbell, No. 127.
Puget formation, Willis, Nos. 894, 895.
Puyallup Glacial epoch, Willis, No. 896,

Geologic Formations Described—Continued.
Puyallup sands, Willis, No. 896.
Quail porphyry, Emmons, No. 259.
Raccoon River beds, Bain and Leonard, No. 45.
Raleigh limestone, Campbell, No. 127.
Rampart series, Emmons, No. 260.
Rancocas formation, Clark, No. 152.
Redbank sand, Clark, No. 152.
Red beds, Beede, No. 67.
Red beds, Williston, No. 904.
Reeder sandstone, Gould, No. 308.
Richmond shale, Campbell, No. 128.
Rio Grande gravel, Herrick, No. 340.
Rio Grande loess, Herrick, No. 340.
Rockcastle conglomerate lentil, Campbell, Nos. 128, 129.
Rockville conglomerate, Calvin, No. 123.
Rockwood formation, Campbell, No. 127.
Rockwood formation, Spencer, No. 723.
Romney shale, Campbell, No. 127.
Romney shale, Spencer, No. 723.
Roseville shale and sandstone, Beede, No. 65.
Rowe schist, Emerson, No. 258.
Russell formation, Campbell, No. 127.
St. Lawrence shale, Berkey, No. 74.
St. Louis, Beyer, No. 76.
St. Peters sandstone, Blatchley and Ashley, No. 92.
Sac limestone, Shepard, No. 698.
Salina, Ries, No. 659.
Salina group, Bishop, No. 80.
Salina group, Lincoln, No. 490.
Salina group, Luther, No. 505.
Sandstone, first, Shepard, No. 698.
Sandstone, second, Shepard, No. 698.
Sangamon zone, Leverett, No. 487.
San Miguel beds, Hill, No. 352.
San Miguel formation, Purington, No. 644.
San Pablo formation, Fairbanks, No. 262.
San Pablo formation, Knowlton, No. 451.
San Pablo formation, Merriam, Nos. 545, 546.
San Pablo formation, Turner, No. 777.
Sault Ste. Marie sandstone, Bell, No. 70.
Savoy schist, Emerson, No. 258.
Sawatch quartzite, Emmons, No. 259.
Saxicava sand, Wilson, No. 912.
Sequoia formation, Campbell, No. 127.
Severy shale, Haworth, No. 335.
Sevier shale, Campbell, No. 127.
Sewell marls, Clark, No. 152.
Shark River formation, Clark, No. 152.
Shenandoah limestone, Spencer, No. 723.
Shunganunga shale, Beede, No. 65.
Silver Lake shale, Beede, No. 65.
Skunnemunk formation, Ries, No. 658.
Soldier Creek shale, Beede, No. 65.
Spring Creek clays, Gould, No. 308.
Spring rock, Beede, No. 65.
Stanton limestone, Beede, No. 65.
Staten Island serpentine, Merrill, No. 549.
State Quarry limestone, Calvin, No. 120.
Stockton series, Kümmel, No. 456.
Styliolus limestone, Grabau, No. 312.
Sub-Aftonian, Calvin, No. 123.
Sub-Aftonian stage, Beyer, No. 76.
Sugarloaf arkose, Emerson, No. 258.

Geologic Formations Described—Continued.
Superjacent series, Turner, No. 776.
Tahkandit series, Emmons, No. 260.
Talcott diabase, Emerson, No. 258.
Tar sands, Tyrrell, No. 798.
Tecumseh shale, Beede, No. 65.
Tellowa formation, Campbell, No. 127.
Thayer shale, Haworth, No. 335.
Thayer shale, Keyes, No. 424.
Topeka limestone, Beede, No. 65.
Topeka limestone, Haworth, No. 335.
Toronto formation, Leverett, No. 485.
Trenton, Bell, No. 68.
Trenton, Ells, No. 256.
Trenton, Keyes, No. 415.
Trenton, Ries, No. 658.
Trenton limestone, Blatchley and Ashley, No. 92.
Trenton limestone, Cushing, No. 182.
Truro series, Shaler, No. 695.
Tully limestone, Lincoln, No. 490.
Tully limestone, Luther, No. 505.
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      limatula Dall, Dall, No. 184.
      lisbonensis Aldrich, Dall, No. 184.
      microgrammata n. sp., Dall, No. 184.
      navicilloides n. sp., Aldrich, No. 12.
      ruffini Conrad, Dall, No. 164.
      simplex Orbigny, Dall, No. 184.
      sp., Harris, No. 334.
    Anomocare magnum Brogger ? var., Matthews, No. 535.
      tucer Billings sp., Matthews, No. 535.
    Aphelops fossiger, Leidy, 481.

Paleontology—Continued.

Genera and species described—Continued.

- Aralia macrophylla Newb., Newberry, No. 573*a*.
  - (?) quinquepartita Lesq., Newberry, No. 573*a*.
  - rotundiloba Newb. (?), Hollick, No. 368.
  - towneri Lesq.(?), Hollick, No. 370.
- Araucaria spatulata Newb., Newberry, No 573*a*.
- Araucarites ovatus n. sp., Hollick, No. 370.
- Arca aquila Heilprin, Dall, No. 184.
  - bordeniana n. sp., Dall, No. 184.
  - carolinensis Wagner, Dall, No. 185.
  - hatchetigbeensis n. sp., Harris, No. 334.
  - occidentalis Phillips, Dall, No. 184.
  - paratina n. sp., Dall, No. 184.
  - triloba Newb., Newberry, No. 573*a*.
  - umbonata Lamarck, Dall, No. 184.
  - virginiæ Wagner, Dall, No. 185.
  - wagneriana Dall, Dall, No. 184.
  - (Barbatia) (Gray) Adams, Dall, No. 184.
  - (Linné) Lamarck, Dall, No. 184.
  - (Lunarca) (Gray) Adams, Dall, No. 184.
  - (Noetia) Gray, Dall, No. 184.
    - incile Say, Dall, No. 184.
    - limula Conrad, Dall, No. 184.
    - limula var. platyura, Dall, No. 184.
    - var. filosa Conrad, Dall, No. 184.
    - ponderosa Say, Dall, No, 184.
  - (Scapharca) (Gray), Dall, No. 184.
- Archægosaurus, Case, No. 134.
- Archæopteryx, Case, No. 136.
- Archimedes, Simpson, No. 702.
- Archimedipora, Simpson, No. 702.
- Arisæma (?) dubia n. sp., Hollick, No. 370.
  - (?) mattewanense n. sp., Hollick, No. 370.
- Aristolochia cordifolia, Newb., Newberry, No. 573*a*.
- Arthroclema, Simpson, No. 702.
- Arthrodira, Case, No. 133.
- Arthropora, Simpson, No. 702.
- Arthrostylus, Simpson, No. 702.
- Ascodictyum, Simpson, No. 702.
- Aspidium kennerlyi Newb., Newberry, No. 573*a*.
- Aspidopora, Simpson, No. 702.
- Aspidorhynchus, Case, No. 183.
- Astarte smithvillensis var., Harris, No. 334.
- Asteroptychius gracilis Newb., Newberry, No. 573.
- Atactodea Dall, Dall, No. 184.
- Atactopora, Simpson, No. 702.
- Atactoporella, Simpson, No. 702.
- Athyris densa, Hall and Clarke, No. 327.
  - subquadrata Hall, Weller, No. 860.
- Atrina argentea Conrad, Dall, No. 184.
  - harrisii n. sp., Dall, No. 184.
  - jacksoniana n sp., Dall, No. 184.
  - rigida Dillwyn, Dall, No. 184.
  - serrata Sowerby, Dall, No. 184.
  - (Argentea ?) chipolana n. sp. ?, Dall, No. 184.
- Atrypina clintoni, Hall and Clarke, No. 327.
- Aulopora anna n. sp., Beede, No. 61.
  - prosseri n. sp., Beede, No. 61.
  - subtenuis Hall, Girty, No. 300.

Paleontology—Continued.

Genera and species described—Continued.

- Avicula gastrodes Meek, Logan, No. 498.
  - sp., Harris, No. 334.
- Aviculopecten batesvillensis n. sp., Weller, No. 860.
  - rectilaterarius Cox, Drake, No. 239.
  - ?, sp., Weller, No. 860.
- Bactropora, Simpson, No. 702.
- Baculites nodosus var. brevis Meek, Logan, No. 498.
  - ovatus Say, Logan No. 498.
- Banksia pusilla Vel., Hollick, No. 370.
- Baptosaurus, Williston, No. 902.
  - onchognathus, Williston, No. 902.
- Barbatia cuculloides var., Harris, No. 334.
  - (Acar) reticulata Gmelin, Dall, No. 184.
  - (Calloarca) arcula Heilprin Dall, No. 184.
    - candida Gmelin, Dall, No. 184.
    - cuculloides Conrad, Dall, No. 184.
    - irregularis n. sp., Dall, No. 184.
    - marylandica Conrad, Dall, No. 184.
    - phalacra n. sp., Dall, No. 184.
  - (Cucullaria) aldrichi n. sp., Dall, No. 184.
    - tæniata n. sp., Dall, No. 184.
  - (Fossularca) adamsi (Shuttleworth) Smith, Dall, No. 184.
    - ovalina n. sp., Dall, No. 184.
  - (Granoarca) propatula Conrad, Dall, No. 184.
    - virginiæ Wagner, Dall, No. 184.
  - (Striarca) centenaria Say, Dall, No. 184.
- Barnea (Leach MS.) Risso, Dall, No. 184.
  - truncata Say, Dall, No. 184.
  - (Scobina) arcuata Conrad, Dall, No. 184.
    - costata Linné, Dall, No. 184.
- Barrandeoceras subcostulatum nom. prov., Whiteaves, No, 875.
- Barrandella areyi, Hall and Clarke, No. 327.
- Bathyuriscus senectus Billings sp., Matthew, No. 535.
- Batostoma, Simpson, No. 702.
- Beecheria davidsoni, Hall and Clarke, No. 327.
- Belemnacanthus giganteus n. sp., Eastman No. 246.
- Belemnitella baculus n. sp., Logan, No. 498.
- Bellerophon sublævis Hall, Weller, No. 860.
  - branneri n. sp., Weller, No. 860.
- Belodon, Case, No. 135.
- Berberis simplex Newb., Newberry, No. 573*a*.
- Berenicea, Simpson, No. 702.
- Bernissartia, Case, No. 135.
- Beryx ? Cuvier, Stewart, No. 748.
  - multidentatus n. sp., Stewart, No. 748.
  - polymicrodus n. sp., Stewart, No. 748.
- Betula angustifolia Newb., Newberry, No. 573*a*.
  - heterodonta Newb., Newberry, No. 573*a*.
  - sp. ? Newberry, No. 573*a*.
- Bison alaskensis Rhoads, Rhoads, No. 651.
  - alleni Marsh, Rhoads, No. 651.
  - antiquus Leidy, Rhoads, No. 651.
  - latifrons Blake, No. 84.
  - latifrons, (Harlan), Rhoads, No. 651.
  - scaphoceras (Cope), Rhoads, No. 651.
  - sp. ?, Rhoads, No. 651.

Paleontology—Continued.
Genera and species described—Continued.
Bolivina punctata d'Orbigny, Bagg, No. 27.
  textilaroides Reuss, Bagg, No. 27.
Bos, Blake, No. 83.
  arizonica, Blake, No. 84.
Botryllopora, Simpson, No. 702.
Brachysaurus, Williston, No. 902.
  overtoni, Williston, No. 902.
Branchiosaurus, Case, No. 134.
Brasenia (?) antiqua Newb., Newberry, No. 573*a*.
Brooksella Walcott, Walcott, No. 844.
  alternata Walcott, Walcott, No. 844.
  confusa Walcott, Walcott, No. 844.
Bronteus senescens Clarke, Clarke, No. 156.
Brontosaurus, Case, No. 135.
Bulimina aculeata, Bagg, No. 27.
  buchiana, Bagg, No. 27.
  elongata, Bagg, No. 27.
  puschi Reuss, Bagg, No. 27.
  variabilis d'Orbigny, Bagg, No. 27.
Bunomeryx montanus n. gen. et sp., Wortman, No. 935.
  elegans, n. sp., Wortman, No. 935.
Bythopora, Simpson, No. 702.
Cabomba (?) gracilis Newb., Newberry, No. 573*a*.
  inermis (Newb.) Hollick, Newberry, No. 573*a*.
Cæcella Gray, Dall, No. 184.
Calcytes polysepala Newb., Newberry, No. 573*a*.
Callista (Aphrodina) tenuis H. & M., Logan, No. 498.
Callopora, Simpson, No. 702.
Callotrypa, Simpson, No. 702.
Camarasaurus, Osborn, No. 590.
  (Atlantosaurus), Case, No. 135.
Camarophoria rhomboidalis, Hall and Clarke, No. 327.
Camelomeryx n. gen., Scott, No. 692.
  longiceps n. sp., Scott, No. 692.
Camelops Leidy, Wortman, No. 935.
  americanus n. sp., Wortman, No. 935.
  kansanus Leidy, Wortman, No. 935.
  vitikerianus Cope, Wortman, No. 935.
Campophyllum torquium Owen, Beede, No. 63.
Cancellaria annosa n. sp., Aldrich, No. 12.
  antiqua Wagner, Dall, No. 185.
  graciloides n. sp., Aldrich, No. 12.
    var. bella n. var., Aldrich, No. 12.
Capellinia mira, Hall and Clarke, No. 327.
Capitosaurus, Case, No. 134.
Cardium hatchetigbeense, Harris, No. 334.
  ingens Wagner, Dall, No. 185.
  tuomeyi, Harris, No. 334.
Carolia Cantraine, Dall, No. 184.
Carolia (Carolia) jamaicensis n. sp., Dall, No. 184.
  (Wakullina) floridana Dall, Dall, No. 184.
Carpinus grandis Ung., Newberry, No. 573*a*.
Carpolithes spinosus Newb., Newberry, No. 573*a*.
  lineatus Newb., Newberry, No. 573*a*.
Carpolithus drupæformis n. sp., Hollick, No. 370.
Carya antiquum Newb., Newberry, No. 573*a*.
Cassia sp. ?, Newberry, No. 573*a*.
Celastrophyllum newberryanum Hollick, Hollick, No. 370.
Celastrus arctica Heer, Hollick, No. 367.
Cephalaspidæ, Case, No. 133.
Ceramella, Simpson, No. 702.
Ceramopora, Simpson, No. 702.
Ceramoporella, Simpson, No. 702.
Ceratodus americanus n. sp., Knight, No. 445.
  robustus n. sp., Knight, No. 445.
Ceratosaurus, Case, No. 135.
Ceriocrinus nodulifera n. sp., Butts, No. 116.
Cetiosaurus, Case, No. 135.
Chama agassizii Wagner, Dall, No. 185.
Champsosaurus, Case, No. 135.
Cheilocephalus n. gen., Berkey, No. 74.
  st. croixensis n. sp., Berkey, No. 74.
Chelydosaurus, Case, No. 134.
Chiloporella, Simpson, No. 702.
Chilotrypa, Simpson, No. 702.
Chlamys choctavensis, Harris, No. 334.
  greggi n. sp., Harris, No. 334.
Chondrenchelys, Case, No. 133.
Chonostrophia helderbergia, Hall and Clarke, No. 327.
Christinia subquadratus, Hall and Clarke, No. 327.
Cimoliosaurus, Case, No. 135.
Cinnamomum heerii Lesq., Newberry, No. 573*a*.
Cladochonus benetti n. sp., Beede, No. 61.
Cladodus mortifer N. & W., Newberry, No. 573.
  splendens Newb., Newberry, No. 573.
Cladopora clarkei n. sp., Girty, No. 300.
  halli n. sp., Girty, No. 300.
Cladoselache, Case, No. 133.
Claosaurus, Case, No. 135.
  annectans Marsh, Williston, No. 902.
Clathrodictylon jewetti, n. sp., Girty, No. 300.
Clathropora, Simpson, No. 702.
Clavulina communis d'Orbigny, Bagg, No. 27.
  parisiensis d'Orbigny, Bagg, No. 27.
Clepsydrope Cope, Williston, No. 904.
Clidastes, Williston, No 902.
  cinerarium, Williston, No. 902.
  liodontus, Williston, No. 902.
  stenops, Williston, No. 902.
  tortor, Williston, No. 902.
  velox, Williston, No. 902.
  westii, Williston, No. 902.
  wymani, Williston, No. 902.
Climatius, Case, No. 133.
Clintonella vagabunda, Hall and Clarke, No. 827.
Clonopora, Simpson, No. 702.
Coccosteus, Case, No. 133.
Coelacanthus, Case, No. 133.
Coelocaulis, Simpson, No. 702.
Coeloconus, Simpson, No. 702.
Coelurus, Case, No. 135.
Colosteus, Case, No. 134.

Paleontology—Continued.

- *Genera and species described*—Continued.
  - Compsemys, Case, No. 135.
  - Conchidium crassiplica, Hall and Clarke, No. 327.
    - exponens, Hall and Clarke, No. 327.
    - georgiæ, Hall and Clarke, No. 327.
    - greenii, Hall and Clarke, No. 327.
    - nettelrothi, Hall and Clarke, No. 327.
    - obsoletum, Hall and Clarke, No. 327.
    - scoparium, Hall and Clarke, No. 327.
  - Congeria lamellata n. sp., Dall, No. 184.
    - leucophæata Conrad, Dall, No. 184.
  - Conocephalites miser Billings, Matthew, No. 535.
  - Conocoryphe pustulosa n. sp., Matthew, No. 535.
  - Conularia gracilis Hall, Ruedemann, No. 672.
  - Coralliophaga prima n. sp., Harris, No. 334.
    - (Oryctomya) claibornensis Dall, Dall, No. 189.
  - Corbicula cornelliana n. sp., Harris, No. 334.
  - Corbula (Bruruiere) Lamarck, Dall, No. 184.
    - alabamiensis var. Harris, No. 334.
    - aldrichi, Harris, No. 334.
    - concha, Harris, No. 334.
    - (Aloidis) caloosæ n. sp., Dall, No. 184.
      - elevata Conrad, Dall, No. 184.
      - engonata var. burnsii Dall, Dall, No. 184.
      - fossata Aldrich, Dall, No. 184.
        - var.? extenuata Dall, Dall, No. 184.
      - heterogenea Guppy, Dall, No. 184.
      - milium n. sp., Dall, No. 184.
      - oniscus Conrad, Dall, No. 184.
      - perdubia de Gregorio, Dall, No. 184.
      - texana Gabb, Dall, No. 184.
      - vieta Guppy, Dall, No. 184.
      - wailesiana Harris, Dall, No. 184.
    - (Bothrocorbula) radiatula n. sp., Dall, No. 184.
      - synarmostes n. sp., Dall, No. 184.
      - viminea Guppy, Dall, No. 184.
      - willcoxii n. sp., Dall, No. 184.
    - (Corbulamella) Meek and Worthen? Dall, No. 184.
    - (Cuneocorbula) alabamiensis Lea, Dall, No. 184.
      - aldrichi Meyer, Dall, No. 184.
      - barrattiana C. B. Adams, Dall, No. 184.
      - compressa Lea, Dall, No. 184.
      - contracta Say, Dall, No. 184.
      - cuneata Say, Dall, No. 184.
      - densata Conrad, Dall, No. 184.
      - inæqualis Say, Dall, No. 184.
      - sarda n. sp., Dall, No. 184.
      - seminella n. sp., Dall, No. 184.
      - sericea n. sp., Dall, No. 184.
      - sphenia n. sp., Dall, No. 184.
      - swiftiana C. B. Adams, Dall, No. 184.
      - whitfieldi n. sp., Dall, No. 184.
  - Cornus newberryi Hollick, Newberry, No. 573*a*.
  - Corylus americana fossilis Newb., Newberry, No. 573*a*.

Paleontology—Continued.

- *Genera and species described*—Continued.
  - Corylus macquarrii (Forbes) Heer, Newberry, No. 573*a*.
    - orbiculata Newb., Newberry, No. 573*a*.
    - rostrata fossilis Newb., Newberry, No. 573*a*.
  - Coryphodon cinctus Cope, Osborn, No. 589.
    - curvicristis Cope, Osborn, No. 589.
    - cuspidatus Cope, Osborn, No. 589.
    - elephantopus Cope, Osborn, No. 589.
    - hamatus Marsh, Osborn, No. 589.
    - latidens Cope, Osborn, No. 589.
    - lobatus Cope, Osborn, No. 589.
    - marginatus Cope, Osborn, No. 589.
    - radians, Osborn, Nos. 587, 589, 594.
    - repandus Cope, Osborn, No. 589.
    - singularis n. sp., Osborn, No. 589.
    - testis, Osborn, No. 589.
    - ventanus n. sp., Osborn, No. 589.
    - wortmani, n. sp., Osborn, No. 589.
    - (Metalophodon) armatus, Osborn, No. 589.
  - Coscinella, Simpson, No. 702.
  - Coscinium, Simpson, No. 702.
  - Coscinotrypa, Simpson, No. 702.
  - Crania agaricana, Hall and Clarke, No. 327.
    - favincola, Hall and Clarke, No. 327.
    - granosa, Hall and Clarke, No. 327.
    - pulchella, Hall and Clarke, No. 327.
  - Craniella ulrichi, Hall and Clarke, No. 327.
  - Crassatella halei, Harris, No. 334.
    - tumidula, Harris, No. 334.
  - Cratægus flavescens Newb., Newberry, No. 573*a*.
  - Crenella, Brown, Dall, No. 184.
    - divaricata Orbigny, Dall, No. 184.
    - duplinensis n. sp., Dall, No. 184.
    - minuscula n. sp., Dall, No. 184.
  - Crepipora, Simpson, No. 702.
  - Cricoptus, Williston, No. 904.
  - Cricotus, Case, No. 134.
  - Crisinella, Simpson, No. 702.
  - Cristellaria acutauricularis (Fichtel and Moll), Bagg, No. 27.
    - articulata (Reuss), Bagg, No. 27.
    - cassis (Fichtel and Moll), Bagg, No. 27.
    - crepidula (Fichtel and Moll), Bagg, No. 27.
    - cretacea Bagg, Bagg, No. 27.
    - cultrata, Bagg, No. 27.
      - (Montfort), Bagg, No. 27.
    - gibba d'Orbigny, Bagg, No. 27.
    - italica (Defrance), Bagg, No. 27.
    - mamilligera Karrer, Bagg, No. 27.
    - megapolitana Reuss, Bagg, No. 27.
    - projecta Bagg, Bagg, No. 27.
    - radiata, Bagg, No. 27.
    - retulata, Bagg, No. 27.
    - rotilata (Lamarck), Bagg, No. 27.
    - secans Reuss, Bagg, No. 27.
    - trachyomphala (Reuss), Bagg, No. 27.
    - triangularis d'Orbigny, Bagg, No. 27.
    - wetherellii, Bagg, No. 27.
      - (Jones), Bagg, No. 27.
  - Cryptonella subelliptica, Hall and Clarke, No. 327.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Ctenacanthus depressus n. sp., Newberry, No. 573.
    - gurleyi n. sp., Newberry, No. 573.
  - Ctenodus fleisheri n. sp., Newberry, No. 573.
    - (Sagenodus) angustus n. sp., Newberry, No. 573.
  - Cucullæ Lamarck, Dall, No. 184.
    - gigantea var., Harris, No. 334.
  - Cunninghamites elegans (Corda.) Endl., Hollick, No. 370.
    - squamosus Heer, Hollick, No. 370.
  - Cuspidaria prima, Harris, No. 334.
  - Cyamodus, Case, No. 135.
  - Cyclamina placenta, Bagg, No. 27.
  - Cyclopora, Simpson, No. 702.
  - Cycloporina, Simpson, No. 702.
  - Cynocercus, Williston, No. 902.
    - incisus, Williston, No. 902.
  - Cynodontia, Case, No. 135.
  - Cynognathus, Case, No. 135.
  - Cyrilla subgen., A. Adams, Dall, No. 184.
  - Cyrtia radians, Hall and Clarke, No. 327.
  - Cyrtina lachrymosa, Hall and Clarke, No. 327.
    - neogenes, Hall and Clarke, No. 327.
    - umbonata var. alpenensis, Hall and Clarke, No. 327.
  - Cyrtoceras quebecense n. sp., Whiteaves, No. 875.
  - Cyrtodaria siliqua Daudin, Dall, No. 184.
  - Cystodictya, Simpson, No. 702.
  - Cystopora, Simpson, No. 702.
  - Dactylodus N. and W., Newberry, No. 573.
    - latus n. sp., Newberry, No. 573.
    - princeps N. and W., Newberry, No. 573.
    - rectus n. sp., Newberry, No. 573.
  - Dactyloidites asteroides Fitch, Walcott, No. 844.
  - Dammara (?) cliffwoodensis n. sp., Hollick, No. 370.
    - microlepis Heer (?), Hollick, No. 367.
  - Daptimus broadheadi n. sp., Stewart, No. 745.
  - Darina Gray, Dall, No. 184.
  - Davila Gray, Dall, No. 184.
  - Dekayella, Simpson, No. 702.
  - Dekayia, Simpson, No. 702.
  - Deltodus complanatus N. and W., Newberry, No. 573.
    - grandis N. and W., Newberry, No. 573.
    - inornatus n. sp., Newberry, No. 573.
    - spatulatus N. and W., Newberry, No. 573.
  - Derbya affinis, Hall and Clarke, No. 327.
    - bennetti, Hall and Clarke, No. 327.
    - (?) biloba, Hall and Clarke, No. 327.
    - broadheadi, Hall and Clarke, No. 327.
    - (?) costatula, Hall and Clarke, No. 327.
    - cymbula, Hall and Clarke, No. 327.
    - ruginosa, Hall and Clarke, No. 327.
  - Desmatochelys lowii, Williston, No. 902.
  - Deuterosaurus, Case, No. 135.
  - Dewalquea groenlandica Heer (?), Hollick, No. 368.
  - Diadactes, Case, No. 135.
  - Diademodon, Case, No. 135.
  - Diamesopora, Simpson, No. 702.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Diannulites, Simpson, No. 702.
  - Diastoporina, Simpson, No. 702.
  - Dicellocephalus, Owen, Berkey, No. 74.
    - misa Hall, Berkey, No. 74.
  - Dicranopora, Simpson, No. 702.
  - Dictyonema crassum n. sp., Girty, No. 300.
  - Dicynodon, Case, No. 135.
  - Dielasma obovatum, Hall and Clarke, No. 327.
    - turgida Hall var. elongata n. var., Weller, No. 880.
  - Dimorphodon, Case, No. 135.
  - Dimya grandis Dall, Dall, No. 184.
  - Dinichthys, Dean, No. 228.
    - intermedius Newberry, Eastman, No. 247.
    - pustuosus, Eastman, No. 247.
    - terrelli Newberry, Eastman, No. 247.
  - Diniotis major n. sp., Lucas, No. 501.
  - Dinornis, Case, No. 136.
  - Diospyros cuspidata n. sp., Kirchner, No. 442.
  - Diplodocus, Case, No. 135.
  - Diplodonta sp., Harris, No. 334.
  - Diplograptus McCoy, Ruedemann, No. 671.
    - pristis Hall, Ruedemann, No. 671.
    - ruedemanni Gurley, Ruedemann, No. 671.
  - Diplopora, Simpson, No. 702.
  - Diplurus, Case, No. 133.
  - Dipnoi, Case, No. 133.
  - Discophyllum peltatum Hall, Walcott, No. 844.
  - Discorbina bertheloti (d'Orbigny), Bagg, No. 27.
    - orbicularis, Bagg, No. 27.
  - Dolichometopus Angelin, Matthew, No. 535.
    - acadicus n. sp., Matthew, No. 535.
  - Dolichosoma, Case, No. 134.
  - Dorypyge Dames, Matthew, No. 535.
    - horrida n. sp., Matthew, No. 535.
    - parvula Billings. sp., Matthew, No. 535.
    - quadriceps valida n. var., Matthew, No. 535.
    - wasatchensis var. acadica n. var., Matthew, No. 535.
  - Dosiniopsis lenticularis, Harris, No. 334.
  - Duncanella rudis, n. sp., Girty, No. 300.
  - Ectoconodon n. gen., Osborn, No. 589.
    - petersoni, n. sp., Osborn, No. 589.
  - Edestus lecontei n. sp., Dean, No. 229.
  - Elonichthys, Case, No. 133.
  - Empedias, Case, No. 135.
  - Eophyton Torell, Walcott, No. 844.
    - linnæanum Torell, Walcott, No. 844.
    - torelli Linnarsson, Walcott, No. 844.
  - Equisetum oregonense Newb., Newberry, No. 573*a*.
    - robustum Newb., Newberry, No. 573*a*.
    - wyomingense Lesq., Newberry, No. 573*a*.
    - sp. ?, Newberry, No. 573*a*.
  - Eridopora, Simpson, No. 702.
  - Erisocrinus toddanus n. sp., Butts, No. 116.
  - Ervilia Turton, Dall, No. 184.
    - chipolana n. sp., Dall, No. 184.
    - lata n. sp., Dall, No. 184.
    - oregonensis n. sp., Dall, No. 184.
    - planata n. sp., Dall, No. 184.

Paleontology—Continued.
Genera and species described—Continued.
Ervilia polita n. sp., Dall, No. 184.
  triangularis n. sp., Dall, No. 184.
Eschatius conidens Cope, Wortman, No. 935.
Estheria, Jones, No. 397.
Eucalyptus, Ward, No. 847.
  nervosa Newb., Hollick, No. 367.
Euchirosaurus, Case, No. 134.
Euchodus amicrodus n. sp., Stewart, No. 748.
  parvus n. sp., Stewart, No. 748.
Eulithota fasciculata Haeckel, Walcott, No. 844.
Eumetria verneuilana Hall, Weller, No. 860.
Euomphalus Sowerby 1812, Berkey, No. 74.
Eurydictya, Simpson, No. 702.
Euspilopora, Simpson, No. 702.
Evactinopora, Simpson, No. 702.
Exogyra læviuscula Roemer, Logan, No. 498.
  ponderosa Roemer, Logan, No. 498.
"Fabella" oblonga, Harris, No. 334.
Fagus cretacea Newb., Newberry, No. 573a.
Favicella, Simpson, No. 702.
Favosites conicus Hall, Girty, No. 300.
  conradi, n. sp., Girty, No. 300.
  helderbergiæ Hall, Girty, No. 300.
Fenestella, Simpson, No. 702.
Fenestralia, Simpson, No. 702.
Fenestrapora, Simpson, No. 702.
Ficus (?) alaskana Newb., Newberry, No. 573a.
  asarifolia minor Lesq., Newberry, No. 573a.
  (?) condoni Newb., Newberry, No. 573a.
  hadjdenii Lesq., Kirchner, No. 442.
  krausiana Heer, Hollick, No. 367.
  membranacea Newb., Newberry, No. 573a.
  planicostata Lesq. ?, Newberry, No. 573a.
  reticulata (Lesq.) Hollick, Newberry, No. 573a.
  woolsoni Newb. (?), Hollick, No. 368.
Fistulana (Bruguiere) Cuvier, Dall, No. 184.
  ocalana, n. sp., Dall, No. 184.
Fistulicella, n. gen., Simpson, No. 702.
Fistulipora, Simpson, No. 702.
Fistuliporella n. gen., Simpson, No. 702.
Fistuliporidra n. gen., Simpson, No. 702.
Fistuliporina n. gen., Simpson, No. 702.
Flabellina cordata Reuss, Bagg, No. 27.
  sagittaria (Lea), Bagg, No. 27.
Flabelliporella, Simpson, No. 702.
Fraxinus affinis Newb., Newberry, No. 573a.
  denticulata Heer ?, Newberry, No. 573a.
  integrifolia Newb., Newberry, No. 573a.
Frondicularia alata d'Orbigny, Bagg, No. 27.
  angusta (Nilsson) var. dimidia Bagg, Bagg, No. 27.
  archiaciana d'Orbigny, var. strigillata n. var., Bagg, No. 27.
  clarki Bagg, Bagg, No. 27.
  gaultina Reuss, Bagg, No. 27.
  inversa Reuss, Bagg, No. 27.
  lanceola Reuss, Bagg, No. 27.
  major Bornemann, Bagg, No. 27.
  ovata Roemer, Bagg, No. 27.
  pulchella Karrer, Bagg, No. 27.
  reticulata (Reuss), Bagg, No. 27.
  verneuilina d'Orbigny, Bagg, No. 27.

Paleontology—Continued.
Genera and species described—Continued.
Fusus fragilis Wagner, Dall, No. 185.
  umbilicatus Wagner, Dall, No. 185.
Galesaurus, Case, No. 135.
Gallicus n. gen., Hay, No. 337.
Gastrochæna cuneiformis Spengler, Dall, No. 184.
  ovata Sowerby, Dall, No. 184.
  (Spengler) Cuvier, Dall, No. 184.
  (Spengleria) Tryon, Dall, No. 184.
    var. rotunda Dall, Dall, No. 184.
Gaudryina pupoides d'Orbigny, Bagg, No. 27.
Geinitzia formosa Heer, Hollick, No. 370.
Glassia romingeri, Hall and Clarke, No. 327.
Glauconome, Simpson, No. 702.
Gleichenia gracilis Heer (?), Hollick, No. 367.
Globigerina bulloides d'Orbigny, Bagg, No. 27.
  bulloides, McClung, No. 514.
    var. triloba Reuss, Bagg, No. 27.
  cretacea d'Orbigny, Bagg, No. 27.
  spinosa, McClung n. sp., McClung, No. 514.
Glomus Jeffreys, Dall, No. 184.
Glossotrypa, Simpson, No. 702.
Glycymeria alabama n. sp., Harris, No. 334.
Glycymeris Da Costa, Dall, No. 184.
  americana Defrance, Dall, No. 184.
  duplinensis n. sp., Dall, No. 184.
  jamaicensis n. sp., Dall, No. 184.
  lævis Tuomey and Holmes, Dall, No. 184.
  parilis Conrad, Dall, No. 184.
  pectinata Gmelin, Dall, No. 184.
  pennacea Lamarck, Dall, No. 184.
  subovata var. plagia Dall, No. 184.
Glyphioceras spilæricus Martin (?), Weller, No. 860.
Glyptodon, Case, No. 136.
Glyptostrobus europæus (Brong.) Heer, Newberry, No. 573a.
Gomphognathus, Case, No. 135.
Gomphotherium Cope, Wortman, No. 935.
  cameloides n. sp., Wortman, No. 935.
  sternbergi Cope, Wortman, No. 935.
Goniopholis, Case, No. 135.
Goniotrypa, Simpson, No. 702.
Graptodictya, Simpson, No. 702.
Grewia crenata (Ung.) Heer, Newberry, No. 573a.
Gryphæa subgen. Lamarck, Dall, No. 184.
  corrugata Say (n. gen. G. corrugata Hill), Hill and Vaughan, No. 356.
  gibberosa Cragin, Hill and Vaughan, No. 356.
  marcoui n. sp., Hill and Vaughan, No. 356.
  mucronata Gabb, Hill and Vaughan, No. 356.
  navia Hall, Hill and Vaughan, No. 356.
  newberryi Stanton, Hill and Vaughan, No. 356.
  pitcheri Morton, Hill and Vaughan, No. 356.
    var. hilli Cragin, Hill and Vaughan, No. 356.

Paleontology—Continued.
Genera and species described—Continued.
Gryphæa wardi n. sp., Hill and Vaughan, No. 356.
washitaensis Hill, Hill and Vaughan, No. 356.
Gypidula romingeri, Hall and Clarke, No. 327.
Gyroceras numa Billings, Whiteaves, No. 875.
Gyroptychius, Case, No. 133.
Hadrosaurus, Case, No. 135.
Hainosaurus, Williston, No. 902.
Hallopus, Case, No. 135.
Haplophragmium concavum Bagg, Bagg, No. 27.
irregulare (Roemer), Bagg, No. 27.
Haploscapha eccentrica Conrad, Logan, No. 498.
grandis Conrad, Logan, No. 498.
niobrärensis, Logan, No. 498.
Hedera sp. ?, Hollick, No. 368.
Hederella, Simpson, No. 702.
(?) Helicoceras corrugatum Stanton, Logan, No. 498.
Helicopora, Simpson, No. 702.
Helochelys. Case, No. 135.
Helodus coxanus n. sp., Newberry, No. 573.
Helopora, Simpson, No. 702.
Hemiphragma, Simpson, No. 702.
Hemitrypa, Simpson, No. 702.
Hernodia, Simpson, No. 702.
Hesperornis regalis, Williston, No. 902.
Heterocardia Deshayes. Dall, No. 184.
(?) Heteroceras angulatum M. & H., Logan, No. 498.
cochleatum M. & H., Logan, No. 498.
Heterodontosuchus ganei n. gen. et sp., Lucas, No. 501.
Heterotrypa, Simpson, No. 702.
Hexarhizites insignis Haeckel, Walcott, No. 844.
Hindia fibrosa Roemer, Girty, No. 300.
Hinnites crassus Conrad, Dall, No. 184.
Holocephali, Case, No. 133.
Holosaurus, Williston, No. 902.
Holptychius, Case, No. 133.
Homotrypa, Simpson, No. 702.
Homotrypella, Simpson. No. 702.
Hydreionocrinus kansasensis n. sp., Weller, No. 861.
Hylerpeton, Case, No. 134.
Hylonomus, Case, No. 134.
Hyomeryx Marsh, Scott, No. 692.
Hyperodapedon, Case, No. 135.
Hyposaurus vebbi Cope, Williston, No. 902.
Hypotherium gratum (H. ingenuum Leidy), Leidy, No. 481.
plicatile, Leidy, No. 481.
princeps, Leidy, No. 481.
Hypnum brownii n. sp., Kirchner, No. 442.
Hypseloconus n. gen., Berkey, No. 74.
capuloides n. sp., Berkey, No. 74.
cornutiformis n. sp., Berkey, No. 74.
cylindricus n. sp., Berkey, No. 74.
franconiensis n. sp., Berkey, No. 74.

Paleontology—Continued.
Genera and species described—Continued.
Hypseloconus recurvus (Whitfield) var. elongatus n. var., Berkey, No. 74.
stabilis n. sp., Berkey, No. 74.
Ichthyodectes cruentus n. sp., Hay, No. 357.
Ichthyorachis, Simpson, No. 702.
Ichthyodorulite, Case, No. 133.
Ichthyornis dispar Marsh, Williston, No. 902.
Icthyosaurus, Case, No. 135.
Idiotrypa, Simpson, No. 702.
Iguanodon, Case, No. 135.
Ilex rigida n. sp., Kirchner, No. 442.
Inoceramus altus Meek, Logan, No. 498.
brownii Cragin, Logan, No. 498.
concentricus n. sp., Logan, No. 498.
cripsii var. barabina Morton, Logan, No. 498.
deformis Meek, Logan, No. 498.
dimidius White, Logan, No. 498.
exogyroides M. & H., Logan, No. 498.
flaccidus White, Logan, No. 498.
fragilis M. & H., Logan, No. 498.
gilbertii White, Logan, No. 498.
incurvus M. & H., Logan, No. 498.
labiatus Schlotheim, Logan, No. 498.
pennatus n. sp., Logan. No. 498.
platinus n. sp., Logan, No. 498.
sagensis var. nebrascensis Owen, Logan, No. 498.
simpsonii Meek, Logan, No. 498.
subconvexus n. sp., Logan, No. 498.
subtriangulatus n. sp., Logan, No. 498.
tenuirostratus M. & H., Logan, No. 498.
truncatus n. sp., Logan, No. 498.
umbonatus M. & H., Logan, No. 498.
undabundus M. & H., Logan, No. 498.
Intrapora, Simpson, No. 702.
Iris sp. ?, Newberry, No. 573a.
Isotrypa, Simpson, No. 702.
Julia Gould, Dall, No. 184.
floridana n. sp., Dall, No. 184.
Juglans affinis n. sp., Kirchner, No. 442.
arctica Heer (?), Hollick, No. 367.
crossii Knowlton, Kirchner, No. 442.
nigella Heer, Newberry, No. 573a.
occidentalis Newb., Newberry, No. 573a.
"Kellia" prima, Harris, No. 334.
Keristella cf. haskinsi Hall, Girty, No. 299.
Labiosa (Ræta) Gray, Dall, No. 184.
alta Conrad, Dall, No. 184.
canaliculata Say. Dall, No. 184.
(Rætella) Dall, No 184.
(Schmidt) Moller, Dall, No. 184.
Lagena globosa (Montagu) Bagg, No. 27.
Laotira Walcott, Walcott, No. 844.
cambria, Walcott, Walcott, No. 844.
Lariosaurus, Case, No. 135.
Lastrea (Goniopteris) fischeri Heer ?, Newberry, No. 573a.
Laurus plutonia Heer, Hollick, Nos. 367, 370.
Leda Schumacher, Dall, No. 184.
acala n. sp., Dall, No. 184.
acrybia n. sp., Dall, No. 184.
acuta Conrad, Dall, No. 184.
amydra n. sp. ?, Dall, No. 184.

Paleontology—Continued.
Genera and species described—Continued.
Leda catasarca n. sp., Dall, No. 184.
  concentrica Say, Dall, No. 184.
  corpulentoides var., Harris, No. 334.
  dodona n. sp., Dall, No. 184.
  elongatoidea, Harris, No. 334.
  flexuosa Heilprin, Dall, No. 184.
  hypsoma n. sp., Dall, No. 184.
  (linifera Conrad var. ?) canonica n. sp., Dall, No. 184.
  marieana, Harris, No. 334.
  multilineata Conrad, Dall, No. 184.
  parva, Harris, No. 334.
  phalacra n. sp. ?, Dall, No. 184.
  pharcida n. sp., Dall, No. 184.
  protexta, Harris, No. 334.
  protexta Gabb, Dall, No. 184.
  trochilia n. sp., Dall, No. 184.
Leguminositis marcouanus Heer, Newberry, No. 573*a*.
Leiorchynchus quadricostatum Vanuxem, Girty, No. 299.
Lepidodendron, Dawson, No. 223.
  cyclostigma Lx., White, No. 870.
Lepidophloios, Dawson, No. 223.
  acadicanus Dawson, Dawson, No. 223.
  cliftonensis Dawson, Nos. 223, 224.
Leptæniscа adnascens, Hall and Clarke, No. 327.
  tangens, Hall and Clarke, No. 327.
Leptobrachites gigantea Haeckel, Walcott, No. 844.
  trigonobrachius Haeckel, Walcott, No. 844.
Leptophractus, Case, No. 134.
Leptoreodon marshi, n. gen. et sp., Wortman, No. 935.
Leptotragulus Scott and Osborn, Scott, No. 692.
Leptotrypa, Simpson, No. 702.
Lichenalia, Simpson, No. 702.
Lima (Bruguière) Cuvier, Dall, No. 184.
  ozarkana n. sp., Harris, No. 334.
  (Ctenoides) scabra Born, Dall, No. 184.
    tenera Sowerby, Dall, No. 184.
  (Lima) caloosana n. sp., Dall, No. 184.
    smirna n. sp., Dall, No. 184.
    vicksburgiana n. sp., Dall, No. 184.
    tampaensis n. sp., Dall, No. 184.
      var. costulata n. sp., Dall, No. 184.
  (Mantellum) caloosana n. sp., Dall, No. 184.
    carolinensis n. sp., Dall, No. 184.
Limæa solida n. sp., Dall, No. 184.
Limopsis Sassi, Dall, No. 184.
Lindstroemella aspidium, Hall and Clarke, No. 327.
Lingula Compta, Hall and Clarke, No. 327.
  lingulata, Hall and Clarke, No. 327.
  paracletus, Hall and Clarke, No. 327.
  scutella, Hall and Clarke, No. 327.
  tæniola, Hall and Clarke, No. 327.
  (Glossina) flabellula, Hall and Clarke, No. 327.
  (Lingulipora) williamsana n. sp., Girty, No. 299.

Paleontology—Continued.
Genera and species described—Continued.
Lingulina carinata d'Orbigny, Bagg, No. 27.
Lingulipora n. subgen., Girty, No. 299.
Lingulops granti, Hall and Clarke, No. 327.
Linnarssonia belti Dav. mut. magna n. mut., Matthew, No. 535.
Liorhynchus lesleyi, Hall and Clarke, No. 327.
  robustus, Hall and Clarke, No. 327.
Liostracus validus n. sp., Matthew, No. 535.
Liquidambar europæum Al. Br., Newberry, No. 573*a*.
  obtusilobatus (Heer) Hollick, Newberry, No. 573*a*.
Liriodendron meekii (Heer), Newberry, No. 573*a*.
  primævum Newb., Newberry, No. 573*a*.
Lithophaga Bolten, Dall, No. 184.
  antillarum Orbigny, Dall, No. 184.
  (?) batesvillensis n. sp., Weller, No. 860.
  nigra Orbigny, Dall, No. 184.
  nuda n. sp., Dall, No. 184.
  (Diverus) bisulcata Orbigny, Dall, No. 184.
  (Myoforceps) aristata Dillwyn, Dall No. 184.
Litoceras versutum Billings, Whiteaves, No. 875.
Loculipora, Simpson, No. 702.
Lucina astartiformis, Harris, No. 334.
  greggi, Harris, No. 334.
  occidentalis Morton, Logan, No. 498.
  ozarkana n. sp., Harris, No. 334.
  pomilia, Harris, No. 334.
  symmetrica (?), Harris, No. 334.
  ulrichi, Harris, No. 334.
Lutraria Lamarck, Dall, No. 184.
Lycosaurus, Case, No. 135.
Lygodium kaulfussi Heer, Newberry, No. 573*a*.
Lyropora, Simpson, No. 702.
Lyroporella, Simpson, No. 702.
Lyroporidra n. gen., Simpson, No. 702.
Lysactinella n. gen., Girty, No. 300.
  gebhardi, n. sp., Girty, No. 300.
  perelegans n. sp., Girty, No. 300.
Lytoceras Suess, Smith, No. 713.
  alamedense n. sp., Smith, No. 713.
Mactra Lamarck, Dall, No. 184.
  chipolana n. sp., Dall, No. 184.
  clathrodon Lea, Dall, No. 184.
  emmonsii Meek, Logan, No. 498.
  prætenuis var. bistriata, Harris, No. 334.
  Linné, Dall, No. 184.
  (Cœlomactra) Dall, Dall, No. 184.
  (Mactrella) Gray, Dall, No. 184.
    darienensis n. sp., Dall, No. 184.
  (Mactroderma) Dall, No. 184.
  (Mactrotoma) Dall, No. 184.
    cymata n. sp., Dall, No. 184.
    fragilis Gmelin, Dall, No. 184.
    undula n. sp., Dall, No. 184.
    willcoxi, n. sp., Dall, No. 184.
Mactropsis Conrad, Dall, No. 184.
Magnolia alternans Heer (?), Newberry, No. 573*a*.

Paleontology—Continued.
Genera and species described—Continued.
Magnolia elliptica Newb. n. sp., Newberry, No. 573*a*.
longifolia Newb. (?), Hollick, No. 368.
obovata Newb., Newberry, No. 573*a*.
rotundifolia Newb., Newberry, No. 573*a*.
woodringensis Hollick, Hollick, No. 367, 370.
Manicaria haydenii Newb., Newberry, No. 573*a*.
Marginulina ensis Reuss, Bagg, No. 27.
pediformis Bornemann, Bagg, No. 27.
trilobata d'Orbigny, Bagg, No. 27.
Martesia Leach, Dall, No. 184.
elongata, Harris, No. 334.
? ovalis n. sp., Dall, No. 184.
Mastodon floridanus, Leidy, No. 481.
Mastodonsaurus, Case, No. 134.
Medusichnites Matthew, Walcott, No. 844.
Medusida Walcott, Walcott, No. 844.
atava Pohlig, Walcott, No. 844.
bicincta Haeckel, Walcott, No. 844.
costatata Torrell (sp.), Walcott, No. 844.
deperdita Beyrich (sp.), Walcott, No. 844.
porpitina Haeckel, Walcott, No. 844.
princeps Torrell (sp.), Walcott, No. 844.
quadrata Haeckel, Walcott, No. 844.
radiata Linnarsson (sp.), Walcott, No. 844.
staurophora Haeckel, Walcott, No. 844.
Medusites cretaceous Kner, Walcott, No. 844.
helgolandicus Brandt, Walcott, No. 844.
latilobatus Ammon, Walcott, No. 844.
Meekapora, Simpson, No. 702.
Megalneusaurus n. gen., Knight, No. 446.
rex Knight, Knight, No. 446.
Megalonyx, Case, No. 136.
Melina Retzius, Dall, No. 184.
maxillata (Deshayes), Dall, No. 184.
Melocrinus milwaukensis n. sp., Weller, No. 862.
var. rotundus n. var., Weller, No. 862.
nodosus Hall, Weller, No. 862.
var. spinosus n. var., Weller, No. 862.
subglobosus n. sp., Weller, No. 862.
Meretrix fulva n. var., Harris, No. 334.
greggi n. var., Harris, No. 334.
hatchetigbeensis, Harris, No. 334.
nuttaliopsis, Harris, No. 334.
subimpressa var., Harris, 334.
Merista tennesseensis, Hall and Clarke, No. 327.
Meristella walcotti, Hall and Clarke, No. 327.
Merycodesmus n. gen., Scott, No. 692.
gracilis n. sp., Scott, No. 692.
Mesodesma Deshayes, Dall, No. 184.
(Donacilla) (Lam.) Phillips, Dall, No. 184.
(Paphies) Dall, No. 184.
(Taria) Gray, Dall, No. 184.
Mesosaurus, Case, No. 135.
Metoposaurus (Metopias), Case, No. 134.
Microgomphodon, Case, No. 135.
Microyoldia Verrill, Dall, No 184.
Miliolina seminulum, Bagg, No. 27.
Mitoclema, Simpson, No. 702.
Modiola alabamensis, Harris, No. 334.
gigas Wagner, Dall, No. 185.
(Brachydontes) multilinigera Meek, Logan, No. 498.
Modiolaria Beck, Dall, No. 184.
carolinensis n. sp., Dall, No. 184.
lateralis Say, Dall, No. 184.
virginica Conrad, Dall, No. 184.
Modiolus Lamarck, Dall, No. 184.
cretaceus Conrad, Dall, No. 184.
ducatelli Conrad, Dall, No. 184.
silicatus n. sp., Dall, No. 184.
pugetensis n. sp., Dall, No. 184.
(Botula) cinnamomeus Lamarck, Dall, No. 184.
(Brachydontes) critinus Bolten, Dall, No. 184.
demissus Dillwyn, Dall, No. 184.
grammatus n. sp., Dall, No. 184.
guppyi n. sp., Dall, No. 184.
(Gregariella) minimus n. sp., Dall, 184.
Monocotyledon gen. et sp., (?) Newberry, No. 573*a*.
Monograptus beecheri n. sp., Girty, No. 308.
Monomerella egani, Hall and Clarke, No. 327.
greenii, Hall and Clarke, No. 327.
kingi, Hall and Clarke, No. 327.
ortoni, Hall and Clarke, No. 327.
Monopteria gibbosa alata n. var., Beede, No. 63.
Monotrypa, Simpson, No. 702.
Monotrypella, Simpson, No. 702.
Monticulipora, Simpson, No. 702.
Moriconia cyclotoxon Deb. and Ett., Hollick, Nos. 367, 368.
Morosaurus, Williston, No. 905.
Mortoniceras shoshonense Meek, Logan, No. 498.
vermillionense M. & H., Logan, No. 498.
Mosasaurus, Williston, No. 902.
horridus, Williston, No. 903.
Mulinia Gray, Dall, No. 184.
caloosensis n. sp., Dall, No. 184.
congesta Conrad, Dall, No. 184.
lateralis Say, Dall, No. 184.
milesii Holmes, Dall, No. 184.
sapotilla n. sp., Dall, No. 184.
Mya arenaria Linne, Dall, No. 184.
arkansana n. sp., Weller, No. 869.
producta Conrad, Dall, No. 184.
truncata Linne, Dall, No. 184.
Mylodon, Case, No. 136.
Myrica longa Heer, Hollick, No. 368.
(?) trifoliata Newb. n. sp., Newberry, No. 573*a*.
Myrsine elongata Newb., Hollick, No. 368.
Myrtophyllum (Eucalyptus ?) geinitzi Heer (?), Hollick, No. 367.
Mytilus (L.) Bolten, Dall, No. 184.
conradinus Orbigny, Dall, No. 184.
edulis Linné, Dall, No. 184.
pandionis n. sp., Dall, No. 184.
(Hormomya) exustus Linné, Dall, No. 184.
hamatus Say, Dall, No. 184.
(Mytiloconcha) incurvus Conrad, Dall, 184.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Naosaurus, Case, No. 135.
  - Negundo triloba Newb., Newberry, No. 573*a*.
  - Nemataxis, Simpson, No. 702.
  - Nematopora, Simpson, No. 702.
  - Nicholsonella, Simpson, No. 702.
  - Nilssonia gibbsii (Newb.), Hollick, Newberry, No. 573*a*.
  - Nodosaria aculeata, Bagg, No. 27.
    - acuminata (Reuss), Bagg, No. 27.
    - adolphinula (d'Orbigny), Bagg, No. 27.
    - affinis, Bagg, No. 27.
    - annulata Reuss, Bagg, No. 27.
    - bacillum, Bagg, No. 27.
    - communis (d'Orbigny), Bagg, No. 27.
    - consobrina (d'Orbigny), Bagg, No. 27.
      - var. emaciata Reuss, Bagg, No. 27.
    - farcimen (Soldani), Bagg, No. 27.
    - filiformis d'Orbigny, Bagg, No. 27.
    - indifferens (Reuss), Bagg, No. 27.
    - inornata (d'Orbigny), Bagg, No. 27.
    - lævigata d'Orbigny, Bagg, No. 27.
    - longiscata d'Orbigny, Bagg, No. 27.
    - multicostata (d'Orbigny), Bagg, No. 27.
    - nitida d'Orbigny, Bagg, No. 27.
    - obliqua, Bagg, No. 27.
    - obliqua (Linné), Bagg, No. 27.
    - pauperata (d'Orbigny), Bagg, No. 27.
    - polygona Reuss, Bagg, No. 27.
    - radicula (Linné), Bagg, No. 27.
    - raphanus (Linné), Bagg, No. 27.
    - roemeri (Neuguboren), Bagg, No. 27.
    - rotundata (Reuss), Bagg, No. 27.
    - scabra (Reuss), Bagg, No. 27.
    - spinulosa (Montagu), Bagg, No. 27.
    - vertebralis (Batsch), Bagg, No. 27.
    - williamsi, Bagg, No. 27.
    - zippei Reuss, Bagg, No. 27.
  - Nonionina affinis, Bagg, No. 27.
    - boueana, Bagg, No. 27.
    - depressula, Bagg, No. 27.
    - scapha, Bagg, No. 27.
  - ordenskioldia borealis Heer, Newberry, No. 573*a*.
  - Nothosaurus, Case, No. 135.
  - Nucula Lamarck, Dall, No. 184.
    - chipolana n. sp., Dall, No. 184.
    - magnifica Con., Harris, No. 334.
    - ovula, Harris, No. 334.
    - proxima Say, Dall, No. 184.
    - prunicola n. sp., Dall, No. 184.
    - shaleri Dall, Dall, No. 184.
    - sinaria n. sp., Dall, No. 184.
    - taphria n. sp., Dall, No. 184.
  - Nyssa (?) cuneata Newb., Newberry, No. 573*a*.
    - vetusta Newb., Newberry, No. 573*a*.
  - Odontotrypa, Simpson, No. 702.
  - Omphalopioios n. gen., White, No. 870.
  - Onoclea sensibilis fossilis Newb., Newberry, No. 573*a*.
  - Oracanthus lineatus n. sp., Newberry, No. 573.
    - pugiunculus St. J. & W., Newberry, No. 573.
    - vetustus, Newberry, No. 573.

Paleontology—Continued.
- *Genera and species described*—Continued.
  - Orbiculoidea batesvillensis n. sp., Weller, No. 860.
    - berzeri, Hall and Clarke, No. 327.
    - numulus, Hall and Clarke, No. 327.
    - (Schizotreta) ovalis, Hall and Clarke, No. 327.
    - sp., Girty, No. 299.
  - Orbulina univerda, McClung, No. 514.
  - Oriskania navicella, Hall and Clarke, No. 327.
  - Ophiderpeton, Case, No. 134.
  - Ornithochierus, Case, No. 135.
  - Orthis flabellites var. spania, Hall and Clarke, No. 327.
    - (?) glypta, Hall and Clarke, No. 327.
    - (?) holstoni, Hall and Clarke, No. 327.
    - panderiana, Hall and Clarke, No. 327.
    - (?) saffordi, Hall and Clarke, No. 327.
    - (Dalmanella) arcuaria, Hall and Clarke, No. 327.
      - superstes, Hall and Clarke, No. 327.
    - (Plæsiomys) loricula, Hall and Clarke, No. 327.
    - (Rhipidomella) oweni, Hall and Clarke, No. 327.
    - (Schizophoria) senecta, Hall and Clarke, No. 327.
  - Orthoceras beauportense n. sp., Whiteaves, No. 875.
    - eurekensis (Walcott) (?) Weller, No. 860.
    - hagersvillense n. sp., Whiteaves, No. 875.
    - tenuistriata Hall, Whiteaves, No. 875.
    - walpolensem n. sp., Whiteaves, No. 875.
    - westoni n. sp., Whiteaves, No. 875.
  - Orthothetes desideratus, Hall and Clarke, No. 327.
  - Orthotropia dolomitica, Hall and Clarke, No. 327.
  - Oryctomya n. subgen., Dall, No. 189.
  - Osteocephalus, Case, No. 134.
  - Osteolepis, Case, No. 133.
  - Ostrea Lamarck, Dall, No. 184.
    - alabamiensis Lea, Dall, No. 184.
    - alabamiensis Lea, Harris, No. 334.
    - anceps n. sp., Logan, No. 498.
    - carolinensis Conrad, Dall, No. 184.
    - compressirostra, Harris, No. 334.
    - compressirostra Say, Dall, No. 184.
    - congesta Conrad, Logan, No. 498.
    - crenulimarginata Gabb, Dall, No. 184.
    - falco Dall, No. 184.
    - georgiana Conrad, Dall, No. 184.
    - haitensis Sowerby, Dall, No. 184.
    - johnsoni Aldrich, Dall, No. 184.
    - lugubris Conrad, Logan, No. 498.
    - megodon, Dall, No. 184.
    - percrassa Conrad, Dall, No. 184.
    - podagrina, Dall, No. 184.
    - pulaskensis Harris, Dall, No. 184.
    - sculpturata Conrad, Dall, No. 184.
    - sellæformis Conrad, Dall, No. 184.
    - sellæformis Conrad, Harris, No. 334.
    - thirsæ Harris, No. 334.
    - thirsæ Gabb, Dall, No. 184.

Paleontology—Continued.
Genera and species described—Continued.
Ostrea trigonalis Dall, No. 184.
var. sylværupis, Harris, No. 334.
vicksburgensis Conrad, Dall, No. 184.
virginica Gmelin, Dall, No. 184.
(Alectronta) larva Lamarck, Logan, No. 498.
(Gryphæostrea) subeversa Conrad, Dall, No. 184.
Pachydictya, Simpson, No. 702.
Pachyrhizodus leptognathus n. sp., Stewart, No. 748.
velox n. sp., Stewart, No. 748.
Palæomylus Woodward (1891), Eastman, No. 246.
greenei Eastman, No. 246.
predator n. sp., Eastman, No. 246.
Paleosyops, Case, No. 136.
Paliurus integrifolius Hollick (?), Hollick, No. 370.
Panomya Gray, Dall, No. 184.
ampla Dall, No. 184.
norvegica Spengler, Dall, No. 184.
Panopea Menard, Dall, No. 184.
americana Conrad, Dall, No. 184.
floridana Heilprin, Dall, No. 184.
goldfussi Wagner, Dall, No. 184.
generosa Gould, Dall, No. 184.
reflexa Say, Dall, No. 184.
whitfieldi Dall, Dall, No. 184.
Panocthus, Case, No. 136.
Pantolambda bathmodon Cope, Osborn, No. 589.
cavirictus Cope, Osborn, No. 589.
Paradoxides abenacus mut., Matthew, No. 535.
Parameryx Marsh, Scott, No. 692.
(Leptotragulus) proavus Wortman, No. 935.
Paramya Conrad, Dall, No. 184.
subovata Conrad, Dall, No. 184.
Parapholas Conrad, Dall, No. 184.
sphenoideus White, Logan, No. 498.
sp., Logan, No. 498.
Parastrophia divergens, Hall and Clarke, No. 327.
greenii, Hall and Clarke, No. 327.
latiplicata, Hall and Clarke, No. 327.
multiplicata, Hall and Clarke, No. 327.
Pareiasaurus, Case, No. 135.
Pohyornis, Case, No. 136.
Pecopteris (Cheilanthes) sepulta Newb., Newberry, No. 573*a*.
Pecten Müller, Dall, No. 184.
cretaceus n. sp., Dall, No. 184.
hericeus var. hindsii Carpenter, Dall, No. 184.
var. strategus Dall, Dall, No. 184.
jeffersonius var. septenarius, Say, Dall, No. 184.
madisonius var. sayanus n. var., Dall, No. 184.
(perplanus var. ?) centrotus, Dall, No. 184.
(Æquipecten ?) chipolanus n. sp., Dall, No. 184.
choctavensis Aldrich, Dall, No. 184.

Paleontology—Continued.
Genera and species described—Continued.
Pecten (Æquipecten ?) glyptus Verrill, Dall, No. 184.
inæqualis Sowerby, Dall, No. 184.
oxygonum Sowerby, Dall, No. 184.
perplanus Morton, Dall, No. 184.
scissuratus n. sp., Dall, No. 184.
suwaneensis n. sp., Dall, No. 184.
thetidis Sowerby, Dall, No. 184.
(Amusium) Bolten, Dall, No. 184.
ocalanus n. sp., Dall, No. 184.
precursor n. sp., Dall, No. 184.
(Chlamys) Bolten, Dall, No. 184.
altiplicatus Conrad, Dall, No. 184.
alumensis n. sp., Dall, No. 184.
clarkeanus Aldrich, Dall, No. 184.
cocoanus n. sp., Dall, No. 184.
coccymelus n. sp., Dall, No. 184.
decemnarius Conrad, Dall, No. 184.
deshayesii Lea, Dall, No. 184.
exasperatus Sowerby, Dall, No. 184.
fucanus n. sp., Dall, No. 184.
greggi Harris, Dall, No. 184.
harrisii n. sp., Dall, No. 184.
hericeus Gould, Dall, No. 184.
var. navarchus Dall, Dall, No. 184.
indecisus n. sp., Dall, No. 184.
interlineatus Gabb, Dall, No. 184.
islandicus Müller, Dall, No. 184.
kneiskerni Conrad, Dall, No. 184.
latiauritus Conrad, Dall, No. 184.
var. fucicolus, Dall, No. 184.
var. monotimeris Conrad, Dall, No. 184.
nuperus Conrad, Dall, No. 184.
opunta n. sp., Dall, No. 184.
ornatus Lamarck, Dall, No. 184.
var. vaginulus Dall, Dall, No. 184.
parmeleei n. sp., Dall, No. 184.
tricenarius Conrad, Dall, No. 184.
wahtubbeanus n. sp., Dall, No. 184.
var. wilcoxii n. sp., Dall, No. 184.
(Hinnites) Defrance, Dall, No. 184.
(Euvola) bowdenensis n. sp., Dall, No. 184.
(Lyropecten) Conrad, Dall, No. 184.
(Nodipecten) anatipes Morton, Dall, No. 184.
antillarum Recluz, Dall, No. 184.
caloosaensis n. sp., Dall, No. 184.
condylomatus n. sp., Dall, No. 184.
nodosus Linné, Dall, No. 184.
peedeensis Tuomey and Holmes, Dall, No. 184.
pulchricosta Meyer and Aldrich, Dall, No. 184.
rogersi Conrad, Dall, No. 184.
subnodosus Sowerby, Dall, No. 184.
(Patinopecten) Dall, Dall, No. 184.
bellus Conrad, Dall, No. 184.
biformis Conrad, Dall, No. 184.
burnsii n. sp., Dall, No. 184.
caurinus Gould, Dall, No. 184.
compactus n. sp., Dall, No. 184.
coosensis Shumard, Dall, No. 184.
diegensis Dall, Dall, No. 184.

Paleontology—Continued.
Genera and species described—Continued.
Pecten (Patinopecten) eugrammatus n. sp., Dall, No. 184.
expansus Dall, Dall, No. 184.
hemicyclicus Racenel, Dall, No. 184.
hemphillii Dall, Dall, No. 184.
humphreysii Conrad, Dall, No. 184.
poulsoni Morton, Dall, No. 184.
propatulus Conrad, Dall, No. 184.
ravemeli n. sp., Dall, No. 184.
soror Gabb, Dall, No. 184.
stearnsii, Dall, No. 184.
(Placopecten) Verrill, Dall, No. 184.
clintonius Say, Dall, No. 184.
marylandicus Wagner, Dall, No. 184.
(Plagioctenium) excentricus Gabb, Dall, No. 184.
gabbi Dall, Dall, No. 184.
demiurgus n. sp., Dall, No. 184.
deserti Conrad, Dall, No. 184.
gibbus Linne, Dall, No. 184.
var. amplicostatus Dall, Dall, No. 184.
var. borealis, Dall, No. 184.
var. dislocatus Say, Dall, No. 184.
var. irradians Lamarck, Dall, No. 184.
var. nucleus Born, Dall, No. 184.
magellanicus Emelin, Dall, No. 184.
oboreus Conrad, Dall, No. 184.
var. comparilis Tuomey and Holmes, Dall, No. 184.
var. darlingtonensis Dall, No. 184.
var. eboreus Conrad, Dall, No. 184.
var. senescens Dall, Dall, No. 184.
var. solarioides Heilprin, Dall, No. 184.
var. yorkensis Conrad, Dall, No. 184.
pabloensis Conrad, Dall, No. 184.
subventricosus n. sp., Dall, No. 184.
virginianus Conrad, Dall, No. 184.
(Propeamusium) alabamensis Aldrich, Dall, No. 185.
alaskensis Dall, Dall, No. 184.
(Pseudamusium) H. and A. Adams, Dall, No. 184.
calvatus Morton, Dall, No. 184.
cerinus Conrad, Dall, No. 184.
frontalis Dall, No. 184.
guppyi n. sp., Dall, No. 184.
scintillatus Conrad, Dall, No. 184.
Pectunculus idoneus, Harris, No. 334.
virginiæ Wagner, Dall, No. 185.
Pelion, Case, No. 134.
Pentamerus oblongus Sowerby, var. maquoketa, Hall and Clarke, No. 327.
var. subrectus, Hall and Clarke, No. 327.
Pentremiridea filosa Whiteaves (?), Weller, No. 862.
milwaukensis n. sp., Weller, No. 862.
Pephricaris horripilata n. sp., Clarke, No. 156.
Periploma butleriana, Harris, No. 334.
Petalotrypa, Simpson, No. 702.
Petigopora, Simpson, No. 702.

Paleontology—Continued.
Genera and species described—Continued.
Phacelopora, Simpson, No. 702.
Phænopora, Simpson, No. 702.
Phaneropleuron, Case, No. 133.
Phenacodus primævus Cope, Osborn, Nos. 588, 592.
Phlyctalnacanthus, telleri, n. sp., Eastman, No. 246.
Pholadidea Goodall, Dall, No. 184.
Pholas alatoidea, Harris, No. 334.
producta Conrad, Dall, No. 184.
(Linné) Lamarck, Dall, No. 184.
(Thovana) campechiensis Gmelin, Dall, No. 184.
memmingeri, Tuomey and Holmes, Dall, No. 184.
Pholidops calceola, Hall and Clarke, No. 327.
patina, Hall and Clarke, No. 327.
Phosphorosaurus, Williston, No. 902.
Phractopora, Simpson, No. 702.
Phragmites sp. (?), Newberry, No. 573*a*.
Phyllites carneosus Newb., Newberry, No. 573*a*.
cupanioides Newb., Newberry, No. 573*a*.
obcordatus Heer, Newberry, No. 573*a*.
vanonæ Heer, Newberry, No. 573*a*.
venosus Newb., Newberry, No. 573*a*.
Phylloceras Suess, Smith, No. 713.
onöense Stanton, Smith, No. 713.
Phyllodictya, Simpson, No. 702.
Phyllopora, Simpson, No. 702.
Pileotrypa, Simpson, No. 702.
Pinacotrypa, Simpson, No. 702.
Pinna arkansana n. sp., Weller, No. 860.
caloosaensis n. sp., Dall, No. 184.
carnea Gmelin, Dall, No. 184.
quadrata n. sp., Dall, No. 184.
rudis (Linné) Dillwyn, Dall, No. 184.
sp., Harris, No. 334.
Pinnaporina, Simpson, No. 702.
Pinus hambachi n. sp., Kirchner, No. 442.
Pistacia aquehongensis n. sp., Hollick, No. 368.
Pityoxylon hollicki n. sp., Knowlton, No. 452.
n. sp., Hollick, No. 370.
Placenticeras placenta Dekay, Logan, No. 498.
Placodus, Case, No. 135.
Placunanomia lithobleta n. sp., Dall, No. 184.
plicata Tuomey and Holmes, Dall, No. 184.
Planera crenata Newb., Newberry, No. 573*a*.
longifolia Lesq., Newberry, No. 573*a*.
mycrophylla Newb., Newberry, No. 573*a*.
nervosa Newb., Newberry, No. 573*a*.
variabilis Newb., Newberry, No. 573*a*.
Platanus aspera Newb., Newberry, No. 573*a*.
haydenii Newb., Newberry, No. 573*a*.
latiloba Newb., Newberry, No. 573*a*.
nobilis Newb., Newberry, No. 573*a*.
raynoldsii Newb., Newberry, No. 573*a*.
Platecarpus, Williston, Nos. 902, 906.
clidastoides, Williston, No. 902.
coryphæus, Williston, No. 902.
crassartus, Williston, No. 902.
felix, Williston, No. 902.
glandiferus, Williston, No. 902.

Paleontology—Continued.
Genera and species described—Continued.
Platecarpus gracilis, Williston, No. 902.
ictericus, Williston, No. 902.
latifrons, Williston, No. 902.
latispinis, Williston, No. 902.
mudgei, Williston, No. 902.
oxyrhinus, Williston, No. 902.
planifrons, Williston, No. 902.
simus, Williston, No. 902.
tectulus, Williston, No. 902.
Platyodon Conrad, Dall, No. 184.
Plectambonites producta, Hall and Clarke, No. 327.
Plesiosaurus, Case, No. 135.
Plethospira socialis n. sp., Girty, No. 299.
Pleuracanthus, Case, No. 133.
Pleurodon S. Wood, Dall, No. 184.
woodii n. sp., Dall, No. 184.
Pleurostomella subnodosa Reuss, Bagg, No. 27.
Pliauchenia Cope, Wortman, No. 935.
humphreesiana Cope, Wortman, No. 935.
minima n. sp., Wortman, No. 935.
spatula Cope, Wortman, No. 935.
Plicatula Lamarck, Dall, No. 184.
densata Conrad, Dall, No. 184.
filamentosa Conrad, Dall, No. 184.
var. concentrica, Dall, No. 184.
var., Harris, No. 334.
gibbosa Lamarck, Dall, No. 184.
marginata Say, Dall, No. 184.
Plioplatecarpus, Williston, No. 902.
Pododesmus rudis Broderip, Dall, No. 184.
scopelus n. sp., Dall, No. 184.
(Monia) macroschisma Deshayes, Dall, No. 184.
Poëbrotherium Leidy, Wortman, No. 935.
labiatum Cope, Wortman, No. 935.
wilsoni Leidy, Wortman, No. 935.
Polymorphina amygdaloides, Bagg, No. 27.
austriaca, Bagg, No. 27.
communis, Bagg, No. 27.
communis (d'Orbigny), Bagg, No. 27.
complanata, Bagg, No. 27.
compressa (d'Orbigny), Bagg, No. 27.
elegantissima, Bagg, No. 27.
emersoni n. sp., Bagg, No. 27.
gibba (d'Orbigny), Bagg, No. 27.
lactea, Bagg, No. 27.
lactea elongata var. Brady, Bagg, No. 27.
oblonga d'Orbigny, Bagg, No. 27.
orbignii (Zborzewski), Bagg, No. 27.
prælonga, Bagg, No. 27.
problema (d'Orbigny), Bagg, No. 27.
Polypora, Simpson, No. 702.
Polystomella striatopunctata, Bagg, No. 27.
Populites elegans Lesq. (?), Newberry, No. 573*a*.
Populus acerfolia Newb., Newberry, No. 573*a*.
cordata Newb., Newberry, No. 573*a*.
(?) cordifolia Newb., Newberry, No. 573*a*.
cuneata Newb., Newberry, No. 573*a*.
cyclophylla Heer, Newberry, No. 573*a*.
(?) debeyana Heer, Newberry, No. 573*a*.
elliptica Newb., Newberry, No. 573*a*.
elongata Newb., Newberry, No. 573*a*.

Paleontology—Continued.
Genera and species described—Continued.
Populus flabellum Newb., Newberry, No. 573*a*.
genetrix Newb., Newberry, No. 573*a*.
herkeriana Lesq. (?), Hollick, No. 368.
litigiosa Heer, Newberry, No. 573*a*.
microphylla Newb., Newberry, No. 573*a*.
nebrascensis Newb., Newberry, No. 573*a*.
nervosa Newb., Newberry, No. 573*a*.
polymorpha Newb., Newberry, 573*a*.
pyrifolia n. sp., Kirchner, No. 442.
rhomboidea Lesq., Newberry, No. 573*a*.
rotundifolia Newb., Newberry, No. 573*a*.
smilacifolia Newb., Newberry, No. 573*a*.
Portheus lowii n. sp., Stewart, No. 745.
Prasopora, Simpson, No. 702.
Prioniodus armatus Hinde, Girty, No. 298.
Prionocylus hyattii Stanton, Logan, No. 498.
lævianus White, Logan, No. 498.
macombi Meek, Logan, No. 498.
woolgari Mantell, Logan, No. 498.
wyomingensis Meek, Logan, No. 498.
Prismopora, Simpson, No. 702.
Proboscina, Simpson, No. 702.
Procamelus, Leidy, Leidy, No. 481.
Procamelus Leidy, Wortman, No. 935.
gracilis Leidy, Wortman, No. 935.
occidentalis Leidy, Wortman, No. 935.
robustus Leidy, Wortman, No. 935.
Productus ceetriensis Worthen, Weller, No. 860.
cherokeensis n. sp., Drake, No. 239.
pertenuis Meek, Drake, No. 239.
(Marginifera) adairensis n. sp., Drake, No. 239.
Prognathosaurus, Williston, No. 902.
Protæoides daphnogenoides Heer, Hollick, No. 368.
Proterosaurus, Case, No. 135.
Protocardia lenis var., Harris, No. 334.
Protoficus inæqualis Newb., Newberry, No. 573*a*.
Protolabis Cope, Wortman, No. 935.
transmontanus Cope, Wortman, No. 935.
Protolambda n. gen., Osborn, No. 589.
hatcheri n. sp., Osborn, No. 589.
Protophyllum minus Lesq., Newberry, No. 573*a*.
multinerve Lesq., Newberry, No. 573*a*.
sternbergii Lesq., Newberry, No. 573*a*.
Protosphyræna recurvirostris n. sp., Stewart, No. 748.
Protosphyræus bentonia n. sp., Stewart, No. 745.
n. sp., Stewart, No, 745.
Protostega, Case, No. 135.
ischyra (Wieland), Wieland, No. 882.
Protriton, Case, No. 134.
Protylopus petersoni n. gen. et sp., Wortman, No. 935.
Prontella, Simpson, No. 702.
Prunus variabilis Newb., Newberry, No. 573*a*.
Psammobia ozarkana n. sp., Harris, No. 334.
Psammobiidæ, Dall, No. 188.

Paleontology—Continued.

Genera and species described—Continued.

Psephodus (Helodus) politus n. sp., Newberry, No. 573.
Pseudamussium claibornense, Harris, No. 334.
Pteranodon, Case, No. 135.
Pteraspidæ, Case, No. 133.
Pteria colymbus Bolten, Dall, No. 184.
 hirundo, Bolten, Dall, No. 184.
  var. vitrea Reeve, Dall, No. 184.
 multangula H. C. Lea, Dall, No. 184.
 scopoli, Dall, No. 184.
 (argentea var. ?) chipolana Dall, Dall, No. 184.
Pterichidæ, Case, No. 133.
Pteris pennæformis Heer, Newberry, No. 573*a*.
 russellii Newb., Newberry, No. 573*a*.
Pterodactylus, Case, No. 135.
Pteronites hopkinsi n. sp., Weller, No. 860.
 lævis n. sp., Weller, No. 860.
Pteropsis Conrad, Dall, No. 184.
Pterospermites dentatus Heer, Newberry, No. 573*a*.
 modestus Lesq., Hollick, No. 368.
Ptilocella n. gen., Simpson, No. 702.
Ptilodictya, Simpson, No. 702.
Ptilopora, Simpson, No. 702.
Ptiloporella, Simpson, No. 702.
Ptiloporina, Simpson, No. 702.
Ptilotrypa, Simpson, No. 702.
Ptychonema, Simpson, No. 702.
Ptychoparia adamsi Billings sp., Matthew, No. 535.
 calymenoides (Whitfield), Berkey, No. 74.
 limbata n. sp., Matthew, No. 535.
Ptychosiagum, Case, No. 135.
Ptyctodus calceolus, Eastman, No. 246.
 compressus n. sp., Eastman, No. 246.
 ferrox n. sp., Eastman, No. 246.
 obliquus, Eastman, No. 246.
 major, Eastman, No. 246.
 molaris, Eastman, No. 246.
 panderi n. sp., Eastman, No, 246.
Ptyonius, Case, No. 134.
Pulvinulina elegans, Bagg, No. 27.
 karsteni (Reuss), Bagg, No. 27.
 micheliniana (d'Orbigny), Bagg, No. 27.
 reticulata Reuss, var. carinata Bagg, Bagg, No. 27.
 schreibersii, Bagg, No. 27.
Pyropsis coloradoensis Stanton, Logan, No. 498.
Pyrula nansemondi Wagner, Dall, No. 185.
Pyrus cretacea Newb., Newberry. No, 573*a*.
Quercus antiqua Newb., Newberry, No. 573*a*.
 bankslæfolia Newb., Newberry, No. 573*a*.
 castanoides Newb., Newberry, No. 573*a*.
 castanopsis Newb., Newberry, No. 573*a*.
 consimilis Newb., Newberry, No. 573*a*.
 coriacea Newb., Newberry, No. 573*a*.
 dubia Newb., Newberry, No. 573*a*.
 elliptica Newb., Newberry, No. 573*a*.
 flexuosa Newb., Newberry, No. 573*a*.
 gracilis Newb., Newberry, No. 573*a*.
 gronlandica Heer, Newberry, No. 573*a*.

Paleontology—Continued.

Genera and species described—Continued.

Quercus laurifolia Newb., Newberry, No. 573*a*.
 morrisoniana Lesq., Hollick, No. 370.
 (?) novæ-cæsareæ n. sp., Hollick, No. 370.
 paucidentata Newb., Newberry, No, 573*a*.
 salicifolia Newb., Newberry, No. 373*a*.
 simplex Newb., Newberry, No. 573*a*.
 sinuata Newb., Newberry, No. 573*a*.
 sullyi Newb., Newberry, No. 573*a*.
 (?) sp. ?, Hollick, No. 370.
Radiolites maximus n. sp., Logan, No. 498.
Rangia desmoulins, Dall, No. 184.
 johnsoni Dall, Dall, No. 184.
 (Rangianella) Conrad, Dall, No. 184.
Receptaculites infundibuliformis Eaton, Girty, No. 300.
 neptuni, Girty, No. 300.
 oweni, Girty, 300.
Rensselaeria cayuga, Hall and Clarke, No. 327.
 ovulum, Hall and Clarke, No. 327.
Reptaria, Simpson, No. 702.
Resania Gray, Dall, No. 184.
Reteporella, Simpson, No. 702.
Reteporina, Simpson, No. 702.
Rhabdogonium rœmeri Reuss, Bagg, No. 27.
 tricarinatum (d'Orbigny), Bagg, No. 27.
  var. acutangulum Reuss, Bagg, No. 27.
Rhamnites concinnus Newb., Newberry, No. 573*a*.
Rhamnus elegans Newb., Newberry, No. 573*a*.
 ellipticus n. sp., Kirchner, No. 442.
 eridani Ung., Newberry, No. 573*a*.
 inæquilateralis Lesq., Hollick, No. 370.
Rhamphorynchus, Case, No. 135.
Rhinidictya, Simpson, No. 702.
Rhinobolus davidsoni, Hall and Clarke, No. 327.
Rhinocarist (?) bipennis n. sp., Clarke, No. 155.
Rhinopora, Simpson, No. 702.
Rhizomorpha, Hollick, No. 368.
Rhizostomites admirandus Haeckel, Walcott, No. 844.
 lithographicus Haeckel. Walcott, No. 844.
Rhombopora, Simpson, No. 702.
Rhopalonaria, Simpson, No. 702.
Rhophalodon, Case, No. 135.
Rhus (?) nervosa Newb., Newberry, No. 573*a*.
 rotundifolia n. sp., Kirchner, No. 442.
Rhynchonella mutata Hall, Weller, No. 860.
Rhynchodus excavatus, Eastman, No. 246.
 major n. sp., Eastman, No. 246.
 occidentalis, Eastman, No. 246.
 rostratus n. sp., Eastman, No. 246.
 secans, Eastman, No. 246.
Rhynchospira scansa, Hall and Clarke, No. 327.
Rosmarus rosmarus, Rhoads, No. 652.
 virginianus (De Kay), Rhoads, No. 652.
Rostellites ambigua ? Stanton, Logan, No. 498.
 willistonii n. sp., Logan, No. 498.
Rotalia beccarii, Bagg, No. 27.
 orbicularis, Bagg, No. 27.
 soldanii, Bagg, No. 27.
Sagenella, Simpson, No. 702.

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Genera and species described—Continued.
Sabal campbelli Newb., Newberry, No. 573a.
grandifolia Newb. n. sp., Newberry, No. 573a.
imperialis Dn., Newberry, No. 573a.
powelli Newb., Newberry, No. 573a.
Salix angusta Al. Br. ?, Newberry, No. 573a.
cuneata, Newb., Newberry, No. 573a.
flexuosa Lesq., Hollick, No. 367.
flexuosa Newb., Newberry, No. 573a.
foliosa Newb. n. sp., Newberry, No. 573a.
inæqualis Newb., Hollick, No. 368.
meekii Newb., Hollick, No. 370.
meekii Newb., Newberry, No. 573a.
membranacea Newb., Newberry, No. 573a.
proteæfolia lanceolata Lesq., Hollick, No. 367.
Sandalodus ellipticus n. sp., Newberry, No. 573.
Sanguinolites ? sp. ?, Weller, No. 860.
Sapindus affinis Newb., Newberry, No. 573a.
apiculatus Vel., Hollick, No. 370.
(?) membranaceus Newb., Newberry, No. 573a.
morrisoni Lesq., Hollick, No. 368.
Sapocites haydenii Heer, Newberry, No. 573a.
Sarepta A. Adams, Dall, No. 184.
Sassafras acutilobum Lesq. (?), Hollick, No. 370.
cretaceum Newb., Newberry, No. 573a.
recurvatum (Lesq.) Newb., Newberry, No. 573a.
Saurocephalus dentatus n. sp., Stewart, No. 745.
Saurodon ferox n. sp., Stewart, No. 747.
xiphirostris n. sp., Stewart, No. 747.
Sauropoda, Marsh, No. 529.
Saxicava Fleuriau de Bellevue, Dall, No. 184.
arctica Linné, Dall, No. 184.
Scævogyra Whitfield, 1878, Berkey, No. 74.
minnesotensis n. sp., Berkey, No. 74.
Scalaripora, Simpson, No. 702.
Scenellopora, Simpson, No. 702.
Scapharca (Anadara) aresta n. sp., Dall, No. 184.
campsa n. sp., Dall, No. 184.
catasarca n. sp., Dall, No. 184.
clisea n. sp., Dall, No. 184.
rustica Tuomey and Holmes, Dall, No. 184.
subrostrata Conrad, Dall, No. 184.
(Argina) tolepia n. sp., Dall, No. 184.
campechensis Dillwyn, Dall, No. 184.
(Bathyarca) hendersoni n. sp., Dall, No. 184.
spenceri n. sp., Dall, No. 184.
(Cunearca) alcima n. sp., Dall, No. 184.
cumanensis, Dall, No. 184.
incongrua Say, Dall, No. 184.
initiator n. sp., Dall, No. 184.
scalarina Heilprin, Dall, No. 184.
scalaris Conrad, Dall, No. 184.
(Scapharca) acompsa n. sp., Dall, No. 184.
actinophora n. sp., Dall, No. 184.
arata Say, Dall, No. 184.
auriculata Lamarck, Dall, No. 184.

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Genera and species described—Continued.
Scapharca (Scapharca) callicestosa n. sp., Dall, No. 184.
campyla n. sp., Dall, No. 184.
carolinensis Wagner, Dall, No. 184.
chiriquiensis Gabb, Dall, No. 184.
dodona n. sp., Dall, No. 184.
donacia n. sp., Dall, No. 184.
halidonata n. sp., Dall, No. 184.
hypomeia n. sp., Dall, No. 184.
idonea Conrad, Dall, No. 184.
improcera Conrad, Dall, No. 184.
inequilateralis Guppy, Dall, No. 184.
latidentata, Dall, No. 184.
lesueuri Dall, Dall, No. 184.
lineosa Say, Dall, No. 184.
plicatura Conrad, Dall, No. 184.
santarosana n. sp., Dall, No. 184.
staminata n. sp., Dall, No. 184.
staminea Say, Dall, No. 184.
subsinuata Conrad, Dall, No. 184.
traversa Say, Dall, No. 184.
triphera n. sp., Dall, No. 184.
Scaphites larvæformis M. & H., Logan, No. 498.
mullananus M. & H., Logan, No. 498.
ventricosus M. & H., Logan, No. 498.
vermiformis M. & H., Logan, No. 498.
warrenii M. & H., Logan, No. 498.
Scaphognathus, Case, No. 185.
Sceptropora, Simpson, No. 702.
"Scintilla" clarkeana, Harris, No. 334.
Schizocrania (?) helderbergia, Hall and Clarke, No. 327.
schucherti, Hall and Clarke, No. 327.
Schizodus batesvillensis n. sp., Weller No. 860.
depressus Worthen (?), Weller No. 860.
insignis n. sp., Drake, No. 239.
Schizodus ? sp., Weller, No. 860.
Scyphomya Dall, Dall, No. 184.
Selenella gracilis, Hall and Clarke, No. 327.
Selenopora, Simpson, No. 702.
Semæostomites zitteli Haeckel, Walcott, No. 844.
Semicoscinium, Simpson, No. 702.
Seminula dawsoni, Hall and Clarke, No. 327.
rogersi, Hall and Clarke, No. 327.
Semipora, Simpson, No. 702.
Septopora, Simpson, No. 702.
Sequoia gracillima (Lesq.) Newb., Newberry, No. 573a.
heerii Lesq., Newberry, No. 573a.
nordenskioldii Heer ?, Newberry, No. 573a.
reichenbachi (Gein.) Heer, Hollick, No. 370.
spinosa Newb., Newberry, No. 573a.
Serpula intrica White, Logan, No. 498.
plana, n. sp., Logan, No. 498.
tenuicarinata M. & H., Logan, No. 498.
Sieberella roemeri, Hall and Clarke, No. 327.
Sigillaria, Dawson, No. 228.
Siphonotreta (?) minnesotensis, Hall and Clarke, No. 327.
Smilax cyclophylla Newb., Newberry, No. 573a.
Solemya alabamensis n. sp., Harris, No. 334.

- **Paleontology—Continued.**
  - ***Genera and species described*—Continued.**
    - **Solen sp., Harris, No. 334.**
    - **Solenopleura arenosa Bill. sp., Matthew, No. 535.**
        - **var. angilimbata n. var., Matthew, No. 535.**
      - **robbii Hartt. mut. parva, Matthew, No. 535.**
    - **Sphærella sp., Harris, No. 334.**
    - **Sphagiopora, Simpson, No. 702.**
    - **Sphenia Turton, Dall, No. 184.**
      - **attenuata n. sp., Dall, No. 184.**
    - **Sphenopteris corrugata Newb., Newberry, No. 573a.**
    - **Spirifer cameratus Morton, Beede, No. 62.**
      - **canandaiguæ, Hall and Clarke, No. 327.**
      - **crispatus, Hall and Clarke, No. 327.**
      - **disjunctus Sowerby, var. sulcifer, Hall and Clarke, No. 327.**
      - **keokuk Hall, Weller, No. 860.**
      - **mucronatus Conrad, var. posterus, Hall and Clarke, No. 327.**
      - **newberryi, Hall and Clarke, No. 327.**
      - **williamsi, Hall and Clarke, No. 327.**
    - **Spirillina orbicularis, n. sp., Bagg, No. 27.**
    - **Spiroloculina planulata, Bagg, No. 27.**
    - **Spiroplecta clarki, Bagg, No. 27.**
    - **Spirophyton, Udden, No. 789.**
    - **Spisula Gray, Dall, No. 184.**
      - **(Hemimactra) Swainson, Dall, No. 184.**
        - **curtidens n. sp., Dall, No. 184.**
        - **delumbis Conrad, Dall, No. 184.**
        - **densa n. sp., Dall, No. 184.**
        - **dodona n. sp., Dall, No. 184.**
        - **duplinensis n. sp., Dall, No. 184.**
        - **magnoliana n. sp., Dall, No. 184.**
        - **marylandica n. sp., Dall, No. 184.**
        - **subponderosa Orbingy, Dall, No. 184.**
      - **(Cymbophora) Gabb, Dall, No. 184.**
      - **(Leptospisula) Dall, Dall, No. 184.**
      - **(Schizodesma) Gray, Dall, No. 184.**
    - **Spondylus bostrychites Guppy, Dall, No. 184.**
      - **dumosis Morton, Dall, No. 184.**
      - **echinatus Martyn, Dall, No. 184.**
      - **rotundatus Heilprin, Dall, No. 184.**
      - **sp., Harris, No. 334.**
    - **Sporangites huronensis Dawson (?), Girty, No. 299.**
    - **Squama, Logan, No. 498.**
      - **lata Logan, Logan, No. 498.**
      - **spissa Logan, Logan, No. 498.**
    - **Standella Gray, Dall, No. 184.**
      - **(Eastonia) Gray, Dall, No. 184.**
    - **Stegosaurus, Case, No. 135.**
    - **Stenognathus n. gen., Newberry, No. 573.**
    - **Stenopora, Simpson, No. 702.**
    - **Sterculia engleri n. sp., Kirchner, No. 442.**
      - **snowii Lesq. (?), Hollick, No. 368.**
      - **sp. ?, Hollick, Nos. 368, 370.**
    - **Stethacanthus compressus n. sp., Newberry, No. 573.**
      - **productus n. sp., Newberry, No. 573.**
    - **Stictocella, Simpson, No. 702.**
    - **Stictopora, Simpson, No. 702.**
    - **Stictoporella n. gen., Simpson, No. 702.**

- **Paleontology—Continued.**
  - ***Genera and species described*—Continued.**
    - **Stictoporina n. gen., Simpson, No. 702.**
    - **Stomatopora, Simpson, No. 702.**
    - **Stramentum, Logan, No. 498.**
      - **hawarthii Williston, Logan, No. 498.**
      - **tabulatum, Logan, No. 498.**
    - **Streblotrypa, Simpson, No. 702.**
    - **Streptelasma, Hall, No. 325.**
      - **strictum Hall, Girty, No. 300.**
    - **Streptorhynchus ulrichi, Hall and Clarke, No. 327.**
      - **williamsi n. sp., Weller, No. 860.**
    - **Strobilites inquirendus n. sp., Hollick, No. 370.**
    - **Strophalosia cymbula, Hall and Clarke, No. 327.**
      - **rockfordensis, Hall and Clarke, No. 327.**
    - **Strophomena conradi, Hall and Clarke, No. 327.**
      - **winchelli, Hall and Clarke, No. 327.**
    - **Strophonella costatula, Hall and Clarke, No. 327.**
    - **Stropora, Simpson, No. 702.**
    - **Synocladia, Simpson, No. 702.**
    - **Synconodon n. gen., Osborn, No. 589.**
      - **sexicuspis n. sp., Osborn, No. 589.**
    - **Syringostoma barretti, n. sp., Girty, No. 300.**
      - **centrotum, n. sp., Girty, No. 300.**
      - **consimile, n. sp., Girty, No. 300.**
      - **foveolatum, n. sp., Girty, No. 300.**
      - **microporum, n. sp., Girty, No. 300.**
    - **Syringothyris missouri, Hall and Clarke, No. 327.**
    - **Tænodictya, Simpson, No. 702.**
    - **Tæniopora, Simpson, No. 702.**
    - **Taxodium distichum miocenum Heer, Newberry, No. 573a.**
      - **occidentale Newb., Newberry, No. 573a.**
    - **Tectulipora, Simpson, No. 702.**
    - **Tectuliporella, Simpson, No. 702.**
    - **Teleoceras fossiger, Osborn, No. 586.**
    - **Teleostomes, Case, No. 133.**
    - **Tellina, greggi, Harris, No. 334.**
      - **subtriangularis, Harris, No. 334.**
      - **(Arcopagia) trumani n. sp., Harris, No. 334.**
    - **Teredina Lamarck, Dall, No. 184.**
      - **bowdeniana n. sp., Dall, No. 184.**
    - **Teredo Linné, Dall, No. 184.**
    - **Tetradium cellulosum Hall sp., Ruedemann, No. 674.**
    - **Textularia abbreviata, Bagg, No. 27.**
      - **agglutinans d'Orbigny, Bagg, No. 27.**
        - **var. porrecta Brady, Bagg, No. 27.**
      - **articulata, Bagg, No. 27.**
      - **gibbosa d'Orbigny, Bagg, No. 27.**
      - **globulosa Ehrenberg, Bagg, No. 27.**
      - **globulosa, McClung, No. 514.**
      - **gramen d'Orbigny, Bagg, No. 27.**
      - **sagittula Defrance, Bagg, No. 27.**
      - **subangulata, Bagg, No. 27.**
      - **turris d'Orbigny, Bagg, No. 27.**
    - **Thamniscus, Simpson, No. 702.**
    - **Thamnocella n. gen., Simpson, No. 702.**
    - **Thamnotrypa, Simpson, No. 702.**

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  - *Genera and species described*—Continued.
    - Thinnfeldia lesquereuxiana Heer, Hollick, Nos. 367, 368.
    - Thuja interrupta Newb., Newberry, No. 573*a*.
    - Titanichthys agassizii Newberry, Eastman, No. 247.
      - clarkii Newberry, Eastman, No. 247
    - Titanotherium, Case, No. 136.
    - Torosaurus, Case, No. 135.
    - Torynifer criticus, Hall and Clarke, No. 327.
    - Toxochelys, Case, No. 137.
      - brachyrhinus n. sp., Case, No. 137.
      - latiremis, Case, No. 137.
      - latiremis Cope, Wagner, No. 842.
      - serrifer, Case, No. 137.
    - Trematella, Simpson, No. 702.
    - Trematosaurus, Case, No. 134.
    - Trematopora, Simpson, No. 702.
    - Trematospira tennesseensis, Hall and Clarke, No. 327.
    - Tresus Gray, Dall, No. 184.
    - Tricalycites papyraceus Newb., Hollick, No. 367, 368.
    - Triceratops calicornis n. sp., Marsh, No. 523.
      - obtusus n. sp., Marsh, No. 523.
    - Trigonarca pulchra var., Harris, No. 334.
    - Trinacria C. Mayer, Dall, No. 184.
      - meekii n. sp., Dall, No. 184.
    - Triplecia niagarensis, Hall and Clarke, No. 327.
    - Tripleuroceras robsoni n. sp., Whiteaves, No. 875.
    - Tripteroceras lambii, Whiteaves, No. 875.
    - Trirachodon, Case, No. 135.
    - Tritaxia tortilis (Reuss), Bagg, No. 27.
      - tricarinata (Reuss), Bagg, No. 27.
    - Tritylodon, Case, No. 135.
    - Trochammina inflata (Montagu), Bagg, No. 27.
    - Trochoceras insigne n. sp., Whiteaves, No. 875.
    - Trochus cinctus Wagner, Dall, No. 185.
    - Tropidopora, Simpson, No. 702.
    - Truncatulina akneriana (d'Orbigny), Bagg, No. 27.
      - haidingerii (d'Orbigny), Bagg, No. 27.
      - lobatula (Walker and Jacob), Bagg, No. 27.
      - refulgens (Montfort), Bagg, No. 27.
      - ungeriana (d'Orbigny), Bagg, No. 27.
      - variabilis, Bagg, No. 27.
      - wuellerstorfi (Schwager), Bagg, No. 27.
    - Tryblidium Lindstrom 1880, Berkey, No. 74.
      - aduncum n. sp., Berkey, No. 74.
      - barabuensis (Whitfield), Berkey, No. 74.
      - convexum n. sp., Berkey, No. 74.
      - corpulentum n. sp., Berkey, No. 74.
      - extensum n. sp., Berkey, No. 74.
      - rectilaterale n. sp., Berkey, No. 74.
    - Tuditanus, Case, No. 134.
    - Tugonia Gray, Dall, No. 184.
      - compacta n. sp., Dall, No. 184.
      - (Tugoniopsis) Dall, Dall, No. 184.
    - Tusoleuthis, n. gen., Logan, No. 498.
      - longus, n. sp., Logan, No. 498.
    - Turritelli whitei Stanton, Logan, No. 498.
    - Tylosaurus, Williston, No. 902.
      - dyspelor, Williston, No. 902.
      - micromus, Williston, No. 902.
      - nepæolicus, Williston, No. 902.
      - proriger, Williston, No. 902.
    - Uintacrinus socialis Grinnell, Logan, No. 498.
    - Ulodendron, Dawson, No. 223.
    - Ulmus speciosa Newb., Newberry, No. 573*a*.
    - Unio (Unio) caloosænsis, n. sp., Dall, No. 184.
    - Unitrypa, Simpson, No. 702.
    - Uvigerina canariensis, Bagg, No. 27.
      - pygmæa, Bagg, No. 27.
      - tenuistriata, Bagg, No. 27.
    - Vaginulina legumen, Bagg, No. 27.
      - legumen (Linné), Bagg, No. 27.
      - strigillata Reuss, Bagg, No. 27.
    - Venericardia alticostata var. Harris, No. 334.
      - planicosta, Harris, No. 334.
    - Vermipora Hall, Girty, No. 300.
    - Verneuilina polystropha (Reuss), Bagg, No. 27.
      - triquetra (Münster), Bagg, No. 27.
    - Viburnum antiquum (Newb.), Hollick, Newberry, No. 573*a*.
      - asperum Newb., Newberry, No. 573*a*.
      - cuneatum Newb., Newberry, No. 573*a*.
      - lanceolatum Newb., Newberry, No. 573*a*.
    - Vinella, Simpson, No. 702.
    - Vitis rotundifolia Newb., Newberry, No. 573*a*.
    - Vitrewebbina Chapman, Bagg, No. 27.
      - lævis (Sollas), Bagg, No. 27.
      - sollasi Chapman, Bagg, No. 27.
    - Widdringstonites reichii (Ett.) Heer (?), Hollick, No. 367.
    - Worthenopora, Simpson, No. 702.
    - Xerobatus (?) undata Cope, Gilbert, No. 296.
    - Xiphactinus molossus Cope, Stewart, No. 746.
      - thaumas Cope, Stewart, No. 746.
    - Xylophaga, Turton, Dall, No. 184.
    - Yoldia, Moller, Dall, No. 184.
      - aldrichiana, Harris, No. 334.
      - frater, n. sp., Dall, No. 184.
      - lævis Say, Dall, No. 184.
      - psammotæa, n. sp., Dall, No. 184.
      - tarpaeia, n. sp., Dall, No. 184.
    - Zanclodon, Case, No. 135.
    - Zenatia, Gray, Dall, No. 184.
    - Zirfæa crispata Linné, Dall, No. 184.
    - Zizyphus longifolia Newb., Newberry, No. 573*a*.
      - obtusa, n. sp., Kirchner, No. 442.
    - Zygospira putilla, Hall and Clarke, No. 327.
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Geology of Aspen mining district, Spurr, No. 739*a*.
Granite breccias of Cripple Creek, Stone, No. 751.
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Metamorphic rocks around Dahlonega, Watson, No. 852.

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[Bulletin 162.]

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81. Correlation Papers—Cambrian, by Charles Doolittle Walcott. 1891. 8°. 447 pp. 3 pl. Price 25 cents.

82. Correlation Papers—Cretaceous, by Charles A. White. 1891. 8°. 273 pp. 3 pl. Price 20 cents.

83. Correlation Papers—Eocene, by William Bullock Clark. 1891. 8°. 173 pp. 2 pl. Price 15 cents.

84. Correlation Papers—Neocene, by W. H. Dall and G. D. Harris. 1892. 8°. 349 pp. 3 pl. Price 25 cents.

85. Correlation Papers—The Newark System, by Israel Cook Russell. 1892. 8°. 344 pp. 13 pl. Price 25 cents.

86. Correlation Papers—Archean and Algonkian, by C. R. Van Hise. 1892. 8°. 549 pp. 12 pl. Price 25 cents.

87. A Synopsis of American Fossil Brachiopoda, including Bibliography and Synonymy, by Charles Schuchert. 1897. 8°. 464 pp. Price 30 cents.

88. The Cretaceous Foraminifera of New Jersey, by Rufus Mather Bagg, jr. 1898. 8°. 89 pp. 6 pl. Price 10 cents.

89. Some Lava Flows of the Western Slope of the Sierra Nevada, California, by F. Leslie Ransome. 1898. 8°. 74 pp. 11 pl. Price 15 cents.

90. A Report of Work done in the Division of Chemistry and Physics, mainly during the Fiscal Year 1890-'91. F. W. Clarke, Chief Chemist. 1892. 8°. 77 pp. Price 10 cents.

91. Record of North American Geology for 1890, by Nelson Horatio Darton. 1891. 8°. 88 pp. Price 10 cents.

92. The Compressibility of Liquids, by Carl Barus. 1892. 8°. 96 pp. 29 pl. Price 10 cents.

93. Some Insects of Special Interest from Florissant, Colorado, and Other Points in the Tertiaries of Colorado and Utah, by Samuel Hubbard Scudder. 1892. 8°. 35 pp. 3 pl. Price 5 cents.

94. The Mechanism of Solid Viscosity, by Carl Barus. 1892. 8°. 138 pp. Price 15 cents.

95. Earthquakes in California in 1890 and 1891, by Edward Singleton Holden. 1892. 8°. 31 pp. Price 5 cents.

96. The Volume Thermodynamics of Liquids, by Carl Barus. 1892. 8°. 100 pp. Price 10 cents.

97. The Mesozoic Echinodermata of the United States, by William Bullock Clark. 1893. 8°. 207 pp. 50 pl. Price 20 cents.

98. Flora of the Outlying Carboniferous Basins of Southwestern Missouri, by David White. 1893. 8°. 139 pp. 5 pl. Price 15 cents.

99. Record of North American Geology for 1891, by Nelson Horatio Darton. 1892. 8°. 73 pp. Price 10 cents.

100. Bibliography and Index of the Publications of the U. S. Geological Survey, 1879–1892, by Philip Creveling Warman. 1893. 8°. 495 pp. Price 25 cents.

101. Insect Fauna of the Rhode Island Coal Field, by Samuel Hubbard Scudder. 1893. 8°. 27 pp. 2 pl. Price 5 cents.

102. A Catalogue and Bibliography of North American Mesozoic Invertebrata, by Cornelius Breckinridge Boyle. 1893. 8°. 315 pp. Price 25 cents.

103. High Temperature Work in Igneous Fusion and Ebullition, chiefly in Relation to Pressure, by Carl Barus. 1893. 8°. 57 pp. 9 pl. Price 10 cents.

104. Glaciation of the Yellowstone Valley north of the Park, by Walter Harvey Weed. 1893. 8°. 41 pp. 4 pl. Price 5 cents.

105. The Laramie and the Overlying Livingston Formation in Montana, by Walter Harvey Weed, with Report on Flora, by Frank Hall Knowlton. 1893. 8°. 68 pp. 6 pl. Price 10 cents.

106. The Colorado Formation and its Invertebrate Fauna, by T. W. Stanton. 1893. 8°. 288 pp. 45 pl. Price 20 cents.

107. The Trap Dikes of the Lake Champlain Region, by James Furman Kemp and Vernon Freeman Marsters. 1893. 8°. 62 pp. 4 pl. Price 10 cents.

108. A Geological Reconnoissance in Central Washington, by Israel Cook Russell. 1893. 8°. 108 pp. 12 pl. Price 15 cents.

109. The Eruptive and Sedimentary Rocks on Pigeon Point, Minnesota, and their Contact Phenomena, by William Shirley Bayley. 1893. 8°. 121 pp. 16 pl. Price 15 cents.

110. The Paleozoic Section in the Vicinity of Three Forks, Montana, by Albert Charles Peale. 1893. 8°. 56 pp. 6 pl. Price 10 cents.

111. Geology of the Big Stone Gap Coal Field of Virginia and Kentucky, by Marius R. Campbell. 1893. 8°. 106 pp. 6 pl. Price 15 cents.

112. Earthquakes in California in 1892, by Charles D. Perrine. 1893. 8°. 57 pp. Price 10 cents.

113. A Report of Work done in the Division of Chemistry during the Fiscal Years 1891–'92 and 1892–'93. F. W. Clarke, Chief Chemist. 1893. 8°. 115 pp. Price 15 cents.

114. Earthquakes in California in 1893, by Charles D. Perrine. 1894. 8°. 23 pp. Price 5 cents.

115. A Geographic Dictionary of Rhode Island, by Henry Gannett. 1894. 8°. 31 pp. Price 5 cents.

116. A Geographic Dictionary of Massachusetts, by Henry Gannett. 1894. 8°. 126 pp. Price 15 cents.

117. A Geographic Dictionary of Connecticut, by Henry Gannett. 1894. 8°. 67 pp. Price 10 cents.

118. A Geographic Dictionary of New Jersey, by Henry Gannett. 1894. 8°. 131 pp. Price 15 cents.

119. A Geological Reconnoissance in Northwest Wyoming, by George Homans Eldridge. 1894. 8°. 72 pp. 4 pl. Price 10 cents.

120. The Devonian System of Eastern Pennsylvania and New York, by Charles S. Prosser. 1895. 8°. 81 pp. 2 pl. Price 10 cents.

121. A Bibliography of North American Paleontology, by Charles Rollin Keyes. 1894. 8°. 251 pp. Price 20 cents.

122. Results of Primary Triangulation, by Henry Gannett. 1894. 8°. 412 pp. 17 pl. Price 25 cents.

123. A Dictionary of Geographic Positions, by Henry Gannett. 1895. 8°. 183 pp. 1 pl. Price 15 cents.

124. Revision of North American Fossil Cockroaches, by Samuel Hubbard Scudder. 1895. 8°. 176 pp. 12 pl. Price 15 cents.

125. The Constitution of the Silicates, by Frank Wigglesworth Clarke. 1895. 8°. 109 pp. Price 15 cents.

126. A Mineralogical Lexicon of Franklin, Hampshire, and Hampden Counties, Massachusetts, by Benjamin Kendall Emerson. 1895. 8°. 180 pp. 1 pl. Price 15 cents.

127. Catalogue and Index of Contributions to North American Geology, 1732–1891, by Nelson Horatio Darton. 1896. 8°. 1045 pp. Price 60 cents.

128. The Bear River Formation and its Characteristic Fauna, by Charles A. White. 1895. 8°. 108 pp. 11 pl. Price 15 cents.

129. Earthquakes in California in 1894, by Charles D. Perrine. 1895. 8°. 25 pp. Price 5 cents.

130. Bibliography and Index of North American Geology, Paleontology, Petrology, and Mineralogy for 1892 and 1893, by Fred Boughton Weeks. 1896. 8°. 210 pp. Price 20 cents.

131. Report of Progress of the Division of Hydrography for the Calendar Years 1893 and 1894, by Frederick Haynes Newell, Topographer in Charge. 1895. 8°. 126 pp. Price 15 cents.

132. The Disseminated Lead Ores of Southeastern Missouri, by Arthur Winslow. 1896. 8°. 31 pp. Price 5 cents.

133. Contributions to the Cretaceous Paleontology of the Pacific Coast: The Fauna of the Knoxville Beds, by T. W. Stanton. 1895. 8°. 132 pp. 20 pl. Price 15 cents.

134. The Cambrian Rocks of Pennsylvania, by Charles Doolittle Walcott. 1896. 8°. 43 pp. 15 pl. Price 5 cents.

135. Bibliography and Index of North American Geology, Paleontology, Petrology, and Mineralogy for the Year 1894, by F. B. Weeks. 1896. 8°. 141 pp. Price 15 cents.

136. Volcanic Rocks of South Mountain, Pennsylvania, by Florence Bascom. 1896. 8°. 124 pp. 28 pl. Price 15 cents.

137. The Geology of the Fort Riley Military Reservation and Vicinity, Kansas, by Robert Hay. 1896. 8°. 35 pp. 8 pl. Price 5 cents.

138. Artesian-Well Prospects in the Atlantic Coastal Plain Region, by N. H. Darton. 1896. 8°. 228 pp. 19 pl. Price 20 cents.

139. Geology of the Castle Mountain Mining District, Montana, by W. H. Weed and L. V. Pirsson. 1896. 8°. 164 pp. 17 pl. Price 15 cents.

140. Report of Progress of the Division of Hydrography for the Calendar Year 1895, by Frederick Haynes Newell, Hydrographer in Charge. 1896. 8°. 356 pp. Price 25 cents.

141. The Eocene Deposits of the Middle Atlantic Slope in Delaware, Maryland, and Virginia, by William Bullock Clark. 1896. 8°. 167 pp. 40 pl. Price 15 cents.

142. A Brief Contribution to the Geology and Paleontology of Northwestern Louisiana, by T. Wayland Vaughan. 1896. 8°. 65 pp. 4 pl. Price 10 cents.

143. A Bibliography of Clays and the Ceramic Arts, by John C. Branner. 1896. 8°. 114 pp. Price 15 cents.

144. The Moraines of the Missouri Coteau and their Attendant Deposits, by James Edward Todd. 1896. 8°. 71 pp. 21 pl. Price 10 cents.

145. The Potomac Formation in Virginia, by W. M. Fontaine. 1896. 8°. 149 pp. 2 pl. Price 15 cents.

146. Bibliography and Index of North American Geology, Paleontology, Petrology, and Mineralogy for the Year 1895, by F. B. Weeks. 1896. 8°. 130 pp. Price 15 cents.

147. Earthquakes in California in 1895, by Charles D. Perrine, Assistant Astronomer in Charge of Earthquake Observations at the Lick Observatory. 1896. 8°. 23 pp. Price 5 cents.

148. Analyses of Rocks, with a Chapter on Analytical Methods, Laboratory of the United States Geological Survey, 1880 to 1896, by F. W. Clarke and W. F. Hillebrand. 1897. 8°. 306 pp. Price 20 cents.

149. Bibliography and Index of North American Geology, Paleontology, Petrology, and Mineralogy for the Year 1896, by Fred Boughton Weeks. 1897. 8°. 152 pp. Price 15 cents.

150. The Educational Series of Rock Specimens Collected and Distributed by the United States Geological Survey, by Joseph Silas Diller. 1898. 8°. 400 pp. 47 pl. Price 25 cents.

151. The Lower Cretaceous Gryphæas of the Texas Region, by R. T. Hill and T. Wayland Vaughan. 1898. 8°. 139 pp. 35 pl. Price 15 cents.

152. A Catalogue of the Cretaceous and Tertiary Plants of North America, by F. H. Knowlton. 1898. 8°. 247 pp. Price 20 cents.

153. A Bibliographic Index of North American Carboniferous Invertebrates, by Stuart Weller. 1898. 8°. 653 pp. Price 35 cents.

154. A Gazetteer of Kansas, by Henry Gannett. 1898. 8°. 246 pp. 6 pl. Price 20 cents.

155. Earthquakes in California in 1896 and 1897, by Charles D. Perrine, Assistant Astronomer in Charge of Earthquake Observations at the Lick Observatory. 1898. 8°. 47 pp. Price 5 cents.

156. Bibliography and Index of North American Geology, Paleontology, Petrology, and Mineralogy for the Year 1897, by Fred Boughton Weeks. 1898. 8°. 130 pp. Price 15 cents.

160. A Dictionary of Altitudes in the United States (Third Edition), compiled by Henry Gannett. 1899. 8°. 775 pp. Price 40 cents.

161. Earthquakes in California in 1898, by Charles D. Perrine, Assistant Astronomer in Charge of Earthquake Observations at the Lick Observatory. 1899. 8°. 31 pp. 1 pl. Price 5 cents.

162. Bibliography and Index of North American Geology, Paleontology, Petrology, and Mineralogy for the Year 1898, by Fred Boughton Weeks. 1899. 8°. 163 pp. Price 15 cents.

In preparation:

157. The Gneisses, Gabbro-Schists, and Associated Rocks of Southwestern Minnesota, by Christopher Webber Hall. 1899. 8°. — pp. 27 pl. Price — cents.

158. The Moraines of Southeastern South Dakota and their Attendant Deposits, by James Edward Todd.

159. The Geology of Eastern Berkshire County, Massachusetts, by B. K. Emerson. 1899. 8° 139 pp. 9 pl. Price ——.

— Flora of the Montana Formation, by Frank Hall Knowlton.

— Reconnaissance in the Rio Grande Coal Fields of Texas, by Thomas Wayland Vaughan, including a Report on Igneous Rocks from the San Carlos Coal Fields, by E. C. E. Lord.

WATER-SUPPLY AND IRRIGATION PAPERS.

By act of Congress approved June 11, 1896, the following provision was made:

"*Provided*, That hereafter the reports of the Geological Survey in relation to the gauging of streams and to the methods of utilizing the water resources may be printed in octavo form, not to exceed one hundred pages in length and five thousand copies in number; one thousand copies of which shall be for the official use of the Geological Survey, one thousand five hundred copies shall be delivered to the Senate, and two thousand five hundred copies shall be delivered to the House of Representatives, for distribution."

Under this law the following papers have been published:

1. Pumping Water for Irrigation, by Herbert M. Wilson. 1896. 8°. 57 pp. 9 pl.
2. Irrigation near Phœnix, Arizona, by Arthur P. Davis. 1897. 8°. 97 pp. 31 pl.
3. Sewage Irrigation, by George W. Rafter. 1897. 8°. 100 pp. 4 pl.
4. A Reconnoissance in Southeastern Washington, by Israel Cook Russell. 1897. 8°. 96 pp. 7 pl.
5. Irrigation Practice on the Great Plains, by Elias Branson Cowgill. 1897. 8°. 39 pp. 12 pl.
6. Underground Waters of Southwestern Kansas, by Erasmus Haworth. 1897. 8°. 65 pp. 12 pl.
7. Seepage Waters of Northern Utah, by Samuel Fortier. 1897. 8°. 50 pp. 3 pl.
8. Windmills for Irrigation, by E. C. Murphy. 1897. 8°. 49 pp. 8 pl.
9. Irrigation near Greeley, Colorado, by David Boyd. 1897. 8°. 90 pp. 21 pl.
10. Irrigation in Mesilla Valley, New Mexico, by F. C. Barker. 1898. 8°. 51 pp. 11 pl.
11. River Heights for 1896, by Arthur P. Davis. 1897. 8°. 100 pp.
12. Water Resources of Southeastern Nebraska, by Nelson H. Darton. 1898. 8°. 56 pp. 21 pl.
13. Irrigation Systems in Texas, by William Ferguson Hutson. 1898. 8°. 67 pp. 10 pl.
14. New Tests of Certain Pumps and Water-Lifts used in Irrigation, by Ozni P. Hood. 1898. 8°. 91 pp. 1 pl.
15. Operations at River Stations, 1897, Part I. 1898. 8°. 100 pp.
16. Operations at River Stations, 1897, Part II. 1898. 8°. 101-200 pp.
17. Irrigation near Bakersfield, California, by C. E. Grunsky. 1898. 8°. 96 pp. 16 pl.
18. Irrigation near Fresno, California, by C. E. Grunsky. 1898. 8°. 94 pp. 14 pl.
19. Irrigation near Merced, California, by C. E. Grunsky. 1899. 8°. 59 pp. 11 pl.
20. Experiments with Windmills, by T. O. Perry. 1899. 8°. 97 pp. 12 pl.
21. Wells of Northern Indiana, by Frank Leverett. 1899. 8°. 82 pp. 2 pl.
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23. Water-right Problems of the Bighorn Mountains, by Elwood Mead. 1899. 8°. 62 pp. 7 pl.
24. Water Resources of the State of New York, Part I, by George W. Rafter. 1899. 8°. 99 pp. 13 pl.
25. Water Resources of the State of New York, Part II, by George W. Rafter. 1899. 8°. 101-200 pp. 12 pl.
26. Wells of Southern Indiana (Continuation of No. 21), by Frank Leverett. 1899. 8°. 64 pp.
27. Operations at River Stations for 1898, Part I. 1899. 8°. 100 pp.
28. Operations at River Stations for 1898, Part II. 1899. 8°. 101-200 pp.
29. Wells and Windmills in Nebraska, by Erwin H. Barbour. 1899. 8°. 85 pp. 27 pl.
30. Water Resources of the Lower Peninsula of Michigan, by Alfred C. Lane. 1899. 8°. 97 pp. 7 pl.

In preparation:

31. Lower Michigan Mineral Waters, by Alfred C. Lane.

— Water Resources of Porto Rico, by Herbert M. Wilson.

TOPOGRAPHIC MAP OF THE UNITED STATES.

When, in 1882, the Geological Survey was directed by law to make a geologic map of the United States, there was in existence no suitable topographic map to serve as a base for the geologic map. The preparation of such a topographic map was therefore immediately begun. About one-fifth of the area of the country, excluding Alaska, has now been thus mapped. The map is published in atlas sheets, each sheet representing a small quadrangular district, as explained under the next heading. The separate sheets are sold at 5 cents each when fewer than 100 copies are purchased, but when they are ordered in lots of 100 or more copies, whether of the same sheet or of different sheets, the price is 2 cents each. The mapped areas are widely scattered, nearly every State being represented. About 900 sheets have been engraved and printed; they are tabulated by States in the Survey's "List of Publications," a pamphlet which may be had on application.

The map sheets represent a great variety of topographic features, and with the aid of descriptive text they can be used to illustrate topographic forms. This has led to the projection of an educational series of topographic folios, for use wherever geography is taught in high schools, academies, and colleges. Of this series the first folio has been issued, viz:

1. Physiographic types, by Henry Gannett, 1898, folio, consisting of the following sheets and 4 pages of descriptive text: Fargo (N. Dak.-Minn.), a region in youth; Charleston (W. Va.), a region in maturity; Caldwell (Kans.), a region in old age; Palmyra (Va.), a rejuvenated region; Mount Shasta, (Cal.), a young volcanic mountain; Eagle (Wis.), moraines; Sun Prairie (Wis.), drumlins; Donaldsonville (La), river flood plains; Boothbay (Me.), a fiord coast; Atlantic City (N. J.), a barrier-beach coast.

GEOLOGIC ATLAS OF THE UNITED STATES.

The Geologic Atlas of the United States is the final form of publication of the topographic and geologic maps. The atlas is issued in parts, or folios, progressively as the surveys are extended, and s designed ultimately to cover the entire country.

Under the plan adopted the entire area of the country is divided into small rectangular districts (designated *quadrangles*), bounded by certain meridians and parallels. The unit of survey is also the unit of publication, and the maps and descriptions of each rectangular district are issued as a folio of the Geologic Atlas.

Each folio contains topographic, geologic, economic, and structural maps, together with textual descriptions and explanations, and is designated by the name of a principal town or of a prominen natural feature within the district.

Two forms of issue have been adopted, a "library edition" and a "field edition." In both the sheets are bound between heavy paper covers, but the library copies are permanently bound, while the sheets and covers of the field copies are only temporarily wired together.

Under the law a copy of each folio is sent to certain public libraries and educational institutions. The remainder are sold at 25 cents each, except such as contain an unusual amount of matter, which are priced accordingly. Prepayment is obligatory. The folios ready for distribution are here listed:

No.	Name of sheet.	State.	Limiting meridians.	Limiting parallels.	Area, in square miles.	Price, in cents.
1	Livingston	Montana	110°-111°	45°-46°	3,354	25
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3	Placerville	California	120° 30′-121°	38° 30′-39°	932	25
4	Kingston	Tennessee	84° 30′-85°	35° 30′-36°	969	25
5	Sacramento	California	121°-121° 30′	38° 30′-39°	932	25
6	Chattanooga	Tennessee	85°-85° 30′	35°-35° 30′	975	25
7	Pikes Peak *	Colorado	105°-105° 30′	38° 30′-39°	932	25
8	Sewanee	Tennessee	85° 30′-86°	35°-35° 30′	975	25
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15	Lassen Peak	California.	121°-122°	40°-41°	3,634	25
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19	Stevenson	Alabama Georgia Tennessee	85° 30′-86°	34° 30′-35°	980	25
20	Cleveland	Tennessee	84° 30′-85°	35°-35° 30′	975	25
21	Pikeville	Tennessee	85°-85° 30′	35° 30′-36°	969	25
22	McMinnville	Tennessee	85° 30′-86°	35° 30′-30°	969	25
23	Nomini	Maryland. Virginia	76° 30′-77°	38°-38° 30′	938	25
24	Three Forks	Montana	111°-112°	45°-46°	3,354	50
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27	Morristown	Tennessee	83°-83° 30	36°-36° 30′	963	25
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29	Nevada City: Nevada City. Grass Valley. Banner Hill.	California.	 121° 00′ 25″-121° 03′ 45″ 121° 01′ 35″-121° 05′ 04″ 120° 57′ 05″-121° 00′ 25″	 39° 13′ 50″-39° 17′ 16″ 39° 10′ 22″-39° 13′ 50″ 39° 13′ 50″-39° 17′ 16″	 11.65 12.09 11.65	50
30	Yellowstone National Park: Gallatin Canyon Shoshone Lake	Wyoming.	110°-111°	44°-45°	3,412	75
31	Pyramid Peak	California.	120°-120° 30′	38° 30′-39°	932	25
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41	Sonora	California.	120°-120° 30′	37° 30′-38°	944	25
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43	Bidwell Bar	California.	121°-121° 30′	39° 30′-40°	918	25

*Out of stock.

No.	Name of sheet.	State.	Limiting meridians.	Limiting parallels.	Area, in square miles.	Price, in cents.
44	Tasewell	Virginia West Va.	81° 30′–82°	37°–37° 30′	950	25
45	Boise	Idaho	116°–116° 30′	43° 30′–44°	864	25
46	Richmond	Kentucky	84°–84° 30′	37° 30′–38°	944	25
47	London	Kentucky	84°–84° 30′	37°–37° 30′	950	25
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49	Roseburg	Oregon	123°–123° 30′	43°–43° 30′	871	25
50	Holyoke	Mass Conn	72° 30′–73°	42°–42° 30′	885	50
51	Big Trees	California	120°–120° 30′	38°–38° 30′	938	25

STATISTICAL PAPERS.

Mineral Resources of the United States, 1882, by Albert Williams, jr. 1883. 8°. xvii, 813 pp. Price 50 cents.

Mineral Resources of the United States, 1883 and 1884, by Albert Williams, jr. 1885. 8°. xiv, 1016 pp. Price 60 cents.

Mineral Resources of the United States, 1885. Division of Mining Statistics and Technology. 1886. 8°. vii, 576 pp. Price 40 cents.

Mineral Resources of the United States, 1886, by David T. Day. 1887. 8°. viii, 813 pp. Price 50 cents.

Mineral Resources of the United States, 1887, by David T. Day. 1888. 8°. vii, 832 pp. Price 50 cents.

Mineral Resources of the United States, 1888, by David T. Day. 1890. 8°. vii, 652 pp. Price 50 cents.

Mineral Resources of the United States, 1889 and 1890, by David T. Day. 1892. 8°. viii, 671 pp. Price 50 cents.

Mineral Resources of the United States, 1891, by David T. Day. 1893. 8°. vii, 630 pp. Price 50 cents.

Mineral Resources of the United States, 1892, by David T. Day. 1893. 8°. vii, 850 pp. Price 50 cents.

Mineral Resources of the United States, 1893, by David T. Day. 1894. 8°. viii, 810 pp. Price 50 cents.

On March 2, 1895, the following provision was included in an act of Congress:

"*Provided*, That hereafter the report of the mineral resources of the United States shall be issued as a part of the report of the Director of the Geological Survey."

In compliance with this legislation the following reports have been published:

Mineral Resources of the United States, 1894, David T. Day, Chief of Division. 1895. 8°. xv, 646 pp., 23 pl.; xix, 735 pp., 6 pl. Being Parts III and IV of the Sixteenth Annual Report.

Mineral Resources of the United States, 1895, David T. Day, Chief of Division. 1896. 8°. xxiii, 542 pp., 8 pl. and maps; iii, 543–1058 pp., 9–13 pl. Being Part III (in 2 vols.) of the Seventeenth Annual Report.

Mineral Resources of the United States, 1896, David T. Day, Chief of Division. 1897. 8°. xii, 642 pp., 1 pl.; 643–1400 pp. Being Part V (in 2 vols.) of the Eighteenth Annual Report.

Mineral Resources of the United States, 1897, David T. Day, Chief of Division. 1898. 8°. viii, 651 pp., 11 pl.; viii, 706 pp. Being Part VI (in 2 vols.) of the Nineteenth Annual Report.

The money received from the sale of the Survey publications is deposited in the Treasury, and the Secretary of the Treasury declines to receive bank checks, drafts, or postage stamps; all remittances, therefore, must be by MONEY ORDER, made payable to the Director of the United States Geological Survey, or in CURRENCY—the exact amount. Correspondence relating to the publications of the Survey should be addressed to—

THE DIRECTOR,
UNITED STATES GEOLOGICAL SURVEY,
WASHINGTON, D. C.

WASHINGTON, D. C., *September, 1899.*

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Second title: United States geological survey | Charles D. Walcott, director | — | Bibliography and index | of | North American geology, paleontology, | petrology, and mineralogy | for | the year 1898 | by | Fred Boughton Weeks | [Vignette] |
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8°. 163 pp.

Author.

Weeks (Fred Boughton).

United States geological survey | Charles D. Walcott, director | — | Bibliography and index | of | North American geology, paleontology, | petrology, and mineralogy | for | the year 1898 | by | Fred Boughton Weeks | [Vignette] |
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[UNITED STATES. *Department of the interior.* (*U. S. geological survey.*) Bulletin 162.]

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